

## SITE C CLIMATE & AIR QUALITY MONITORING

FORT ST. JOHN, BC

### **2018 ANNUAL REPORT**

RWDI #1601625

February 22, 2019

#### **SUBMITTED TO**

**Molly Brewis, P.Chem., PMP**  
Senior Environmental Coordinator  
Site C  
molly.brewis@bchydro.com

#### **BC Hydro**

333 Dunsmuir St, 6th floor  
Vancouver, BC V6B 5R3

#### **SUBMITTED BY**

**Laura Dailyde, P. Eng., PMP**  
Senior Project Manager / Associate  
Laura.Dailyde@rwdi.com

#### **David Chadder, Hon. B.Sc., QEP**

Senior Technical Director / Principal  
David.Chadder@rwdi.com

#### **RWDI**

Suite 280 – 1385 West 8<sup>th</sup> Avenue,  
Vancouver, Canada, V6H 3V9  
T: 604.730.5688  
F: 519.823.1316



# TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION</b> .....	<b>1</b>
<b>1.1</b>	<b>Managing Air Quality</b> .....	<b>2</b>
<b>2</b>	<b>MONITORING NETWORK</b> .....	<b>3</b>
<b>2.1</b>	<b>Data Collection and Quality Assurance / Quality Control (QA/QC)</b> .....	<b>8</b>
<b>3</b>	<b>METEOROLOGY RESULTS</b> .....	<b>9</b>
<b>3.1</b>	<b>Air Temperature and Relative Humidity</b> .....	<b>10</b>
<b>3.2</b>	<b>Wind Characteristics</b> .....	<b>13</b>
<b>3.3</b>	<b>Precipitation</b> .....	<b>15</b>
<b>3.4</b>	<b>Soil Temperature and Moisture</b> .....	<b>17</b>
<b>3.5</b>	<b>Energy and Carbon Balance</b> .....	<b>19</b>
	3.5.1 Data Recovery.....	19
	3.5.2 Results.....	19
<b>4</b>	<b>AIR QUALITY RESULTS</b> .....	<b>20</b>
<b>4.1</b>	<b>Particulate Matter</b> .....	<b>20</b>
<b>4.2</b>	<b>Gaseous Criteria Air Contaminants</b> .....	<b>31</b>
<b>4.3</b>	<b>Air Quality Reporting</b> .....	<b>35</b>
	4.3.1 Monitoring Station Audits.....	35
<b>5</b>	<b>CONCLUSIONS</b> .....	<b>36</b>
<b>6</b>	<b>REFERENCES</b> .....	<b>37</b>



## LIST OF TABLES

Table 2-1: BC Hydro Site C network station locations and elevations .....	6
Table 2-2: BC Hydro Site C network stations and the Fort St. John Airport ECCC station with parameters measured .....	7
Table 3-1: Summary of measured climate parameters during 2018 and comparison with climate normals .....	9
Table 4-1: Summary of measured PM results for 2018 (in $\mu\text{g}/\text{m}^3$ ).....	21
Table 4-2: Percentile values of 24-hour averaged PM concentrations for 2018 (in $\mu\text{g}/\text{m}^3$ ).....	22
Table 4-3: Summary of PM excursion or exceedance events recorded at Site C in 2018 .....	24
Table 4-4: Summary of gaseous criteria air contaminant results for 2018 (in $\mu\text{g}/\text{m}^3$ ).....	31
Table 4-5: Summary of BC MECCS audit results for 2018 .....	35

## LIST OF FIGURES

Figure 2-1: Map of Station Locations in the Site C Monitoring Network.....	4
Figure 2-2: Upgraded Station 8 (Old Fort) with climate-controlled enclosure .....	5
Figure 3-1: Daily average temperatures at all Site C network stations for the year 2018 and comparison with the mean $\pm$ 1 standard deviation of 30-year climate normal (based on 21-day centered rolling average) (in $^{\circ}\text{C}$ ) .....	11
Figure 3-2: Relative humidity at all Site C network stations measured daily at 15:00 LST for the year 2018 (in percent). The monthly climate normal is shown in brown .....	12
Figure 3-3: Wind roses for all Site C stations with 12-month records and Fort St John Airport for 2018.....	14
Figure 3-4: Monthly precipitation at all of the Site C network stations for 2018 and comparison with the mean $\pm$ 1 standard deviation of 30-year Fort St. John Airport climate normal.....	16
Figure 3-5: 24-hour average soil temperatures (in $^{\circ}\text{C}$ ) among the Site C network stations for 2018. The coloured triangles indicate the dates when daily averaged soil temperature exceeded $0^{\circ}\text{C}$ at each one of the stations .....	17



## FIGURES (continued)

Figure 3-6: 24-hour average soil moisture readings (expressed as a decimal fraction of 1) among the Site C network stations for 2018. The coloured triangles indicate the dates when daily averaged soil temperature exceeded 0°C at each one of the stations.....	18
Figure 4-1: Daily average PM <sub>2.5</sub> and PM <sub>10</sub> measurements from Station 1 – Attachie Flat Upper Terrace for 2018 (in µg/m <sup>3</sup> ). The target AAQO's are plotted as broken lines.....	26
Figure 4-2: Daily average PM <sub>2.5</sub> and PM <sub>10</sub> measurements from Station 7C – Fort St. John North Camp C for 2018 (in µg/m <sup>3</sup> ). The target AAQO's are plotted as broken lines.....	27
Figure 4-3: Daily average PM <sub>2.5</sub> and PM <sub>10</sub> measurements from Station 8 – Old Fort for 2018 (in µg/m <sup>3</sup> ). The target AAQO's are plotted as broken lines.....	28
Figure 4-4: Daily average PM <sub>2.5</sub> and PM <sub>10</sub> measurements from Station 9 - 85th Avenue for 2018 (in µg/m <sup>3</sup> ). The target AAQO's are plotted as broken lines.....	29
Figure 4-5: 2018 Burn Piles.....	30
Figure 4-6: Daily 1-hour maximum NO <sub>2</sub> concentrations from Station 7C – Fort St. John North Camp C for 2018 (in µg/m <sup>3</sup> ).....	32
Figure 4-7: Daily 1-hour maximum SO <sub>2</sub> concentrations from Station 7C – Fort St. John North Camp C for 2018 (in µg/m <sup>3</sup> ).....	33
Figure 4-8: 1-hour and 8-hour rolling average CO concentrations from Station 7C – Fort St. John North Camp C for 2018 (in µg/m <sup>3</sup> ).....	34

## LIST OF APPENDICES

Appendix A – 2018 Compliance Summary	
Appendix B – Data Tables	
Appendix C – Seasonal Wind Roses	
Appendix D – Eddy Covariance Report	
Appendix E – Air Quality Alert Response	
Appendix F - Examples of Roadway Dust Suppression with Calcium Chloride Application and Hydro-seeding	



## VERSION HISTORY

Index	Date	Pages	Authors
1	February 22, 2019	All	David Chadder, Hon. B.Sc., QEP Eric Christensen, M.Sc. Laura Dailyde, P.Eng. Iain Hawthorne, Ph.D. Chintan Trivedi, B.Sc. Zoran Nestic, M.A.Sc.



# 1 INTRODUCTION

BC Hydro's Site C Clean Energy Project (the Project) in British Columbia's Peace region will create a new hydroelectric dam and generating station on the Peace River in the vicinity of the City of Fort St. John. To characterize the microclimate and to provide a baseline against which to compare future changes brought on as a result of the Project, BC Hydro installed a network of climate and air quality monitoring stations in the Peace River Valley. This network has been active since 2011, through the preparation and submission of the Project's Environmental Impact Statement, and throughout Project construction to date, which began in mid-2015.

Approval of the Project in 2014 by the Joint Review Panel comprised of the Canadian Environmental Assessment Agency and the British Columbia Environmental Assessment Office was contingent upon BC Hydro satisfying a number of conditions (CEAA, 2014; EAO, 2014).

Condition 12 of the Federal Decision Statement (FDS) is concerned with the health of Indigenous peoples as it relates to air quality. This Condition mandates proper management, monitoring and reporting of air quality to minimize the potential effects on Indigenous health. Condition 12.6 of the FDS requires BC Hydro to "implement the [management] plan and provide to the Agency an analysis and summary of the implementation of the plan, as well as any amendments made to the plan in response to the results, on an annual basis during construction and the first year of operation."

Condition 57 of the provincial Environmental Assessment Certificate (EAC) dictates the management plans (Air Quality Management Plan, Smoke Management Plan) that were created for the Project to minimize air emissions, monitor the ambient air quality and provide these readings to the BC Ministry of the Environment and Climate Change Strategy (BC MECCS) to notify sensitive populations if air quality thresholds are exceeded. As required by Condition 31 of the provincial Environmental Assessment Certificate (EAC), microclimate monitoring is also being conducted to support an understanding of how the Project might affect agricultural activities. Examples include changes to humidity levels that could affect crop drying as well as other climatic factors to estimate moisture deficits.

In 2018, there were four ambient air quality and seven meteorological monitoring stations in operation by the Project. The air quality stations provided continuous measurements that were used to monitor effects of the Project on Indigenous and public health, and to inform construction activities, while the meteorological stations provided continuous measurements for several meteorological parameters (discussed further in Section 2). A summary of the applicable FDS Conditions and the provincial EAC Conditions and their status of the Project with respect to complying with the Air Quality Management Plan and Smoke Management Plan for the calendar year are presented in Appendix A. A summary of the meteorological data collected by the program is included herein, but reporting to satisfy EAC Condition 31 will be done under separate cover.

This document serves to describe the state of the climate and air quality for the eighth year of observations and the fourth year of Project construction, coinciding with the 2018 calendar year. Six previous annual monitoring reports describing the state of the climate and air quality for the years of observations, coinciding with the 2012 through 2017 calendar years have been released (RWDI AIR Inc. 2015a, 2015b, 2015c, 2016, 2017, 2018). The initial monitoring established baseline conditions were in effect until the summer of 2015 when construction activities



began. The network has remained in operation and has continued to collect valuable climate and air quality data in the Peace region. This current report allows for comparisons to the previous data collected by the network and to 30-year climate normals from the Environment and Climate Change Canada (ECCC) station at Fort St John Airport (ECCC, 2016). Climate parameters such as temperature, precipitation, wind speed and direction, soil temperature and soil volumetric water content as well as air quality parameters such as concentrations of particulate matter (PM) specifically PM<sub>2.5</sub> and PM<sub>10</sub>, nitrogen dioxide (NO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>) and carbon monoxide (CO) are presented.

## 1.1 Managing Air Quality

To avoid or minimize exceedances of the ambient air quality objectives (FDS, Section 12.1) BC Hydro developed a Construction Environmental Management Plan (CEMP), (Rev. 4, BC Hydro 2016), which includes a component of Air Quality Management Plan (Section 4.1) and a description of the Air Quality Monitoring Program (Appendix B). The development of the CEMP satisfies Section 12.2 of the FDS. Section 4.1 of the CEMP details the management practices that will be implemented to minimize emissions criteria of air contaminants. Contractors are required to produce site-specific Environmental Protection Plans (EPPs) that explain how the Contractor will meet the CEMP requirements. As of December 2018, construction activities, particularly the Main Civil Works, Generating Station and Spillways Civil Works, and clearing for the future Site C reservoir, are well underway involving elements of the majority of activities listed in Section 4.1 of the CEMP.

As of December 31, 2018 (cumulatively since the start of project construction), 720 Environmental Protection Plans (EPPs) (including revisions) have been reviewed by BC Hydro, many of which include measures to minimize emissions as per Section 4.1 of the CEMP, where applicable. These measures include:

- Application of dust suppressant (water on non-paved roads and other select areas such as laydown areas);
- Application of other products, such as liquid calcium chloride, on roads for cold weather dust suppression;
- Dust suppression systems on drilling equipment; and
- Vehicle inspection and maintenance programs.

In the calendar year 2018, over 266 EPPs (including revisions) were submitted to and reviewed by BC Hydro.

BC Hydro conducts environmental audits during construction to verify implementation of EPPs, including implementation of appropriate mitigation measures in response to air quality alerts. BC Hydro implemented the Active Compliance Management Tool (ACMT) in 2017, which is a database to house environmental inspection data. Of the 2005 inspections conducted by BC Hydro in 2018 against air quality commitments in contractor EPPs, 96% were demonstrated to be fully compliant, 3% were partially compliant, and 1% were not compliant. For any instances of non-compliance, a Field Advice Memo is issued by BC Hydro to the contractor, if warranted.

BC Hydro has also developed a Smoke Management Plan (Rev. 2, BC Hydro 2018), which is another component of the CEMP (Appendix A), and which satisfies Section 12.3.2 of the FDS conditions and Condition 57 of the provincial EAC.



Open burning of piles of vegetation cleared in the footprint of the future Site C reservoir occurred in 2018. Four ignition events occurred during the year including:

- 20 March – 70 piles in the Lower Reservoir;
- 28 March – 88 piles in the Lower Reservoir;
- 27 April – 54 piles on Tea Island; and
- 11 December – 55 piles in the Lower Reservoir.

One event occurred for the Transmission Line:

- 29 June – 178 piles along the corridor

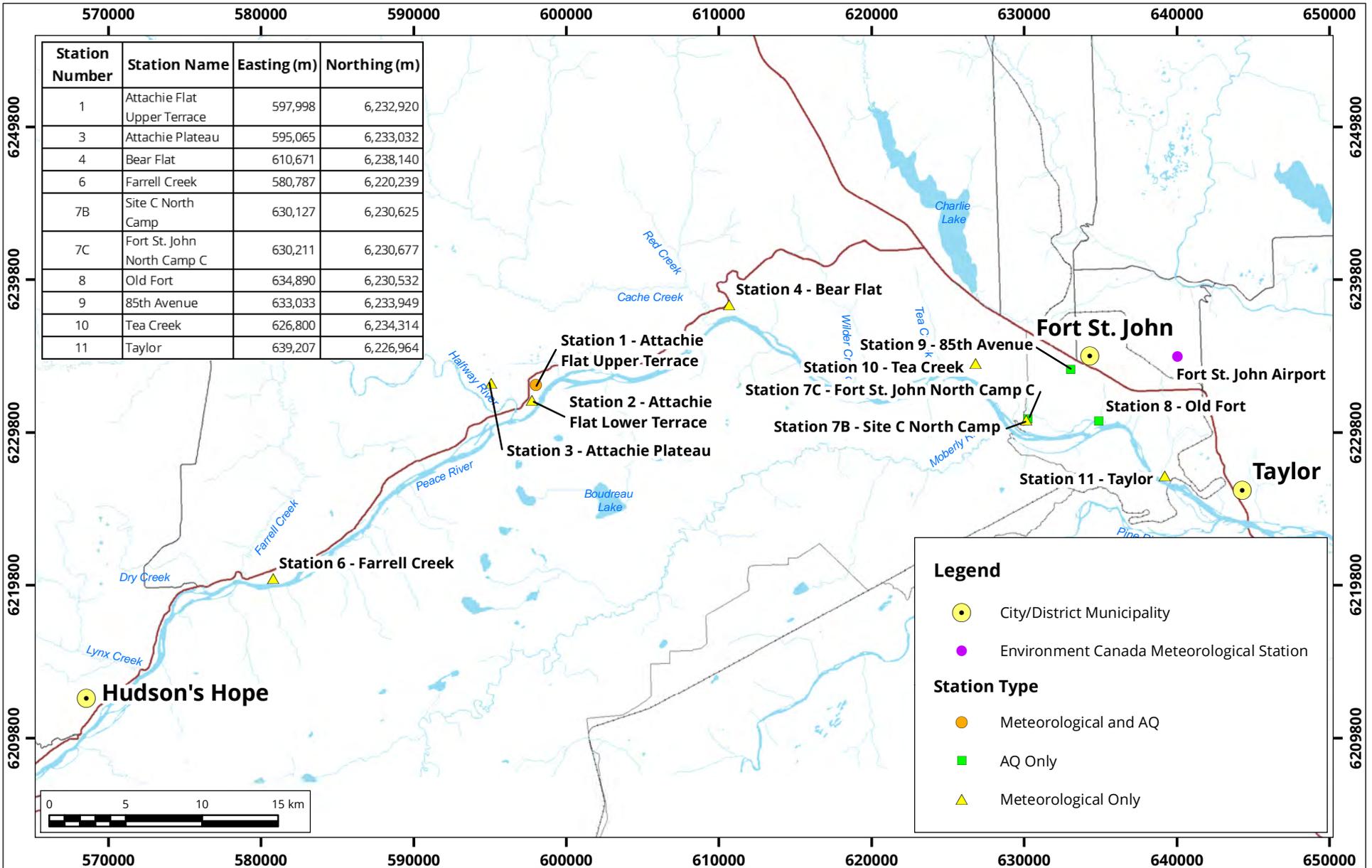
In total, approximately 75 hectares were ignited in the Lower Reservoir, and 18 hectares on Tea Island, based on custom venting forecasts which were used to inform brush burning events. Further details are discussed in Section 4.1.

## 2 MONITORING NETWORK

Figure 2-1 shows the location of the network stations in relation to local communities and the Peace River. Table 2-1 and Table 2-2 show locations and parameters measured at these stations, respectively. Note that Station 8 (Old Fort) was upgraded on February 21, 2018. The upgrade involved moving the particulate matter monitors from two separate shelters into a single larger enclosure with greater heating and air conditioning capacity to minimize indoor temperature fluctuations and allow better access to the equipment for routine maintenance, calibrations and audits. Measurements at Station 8 were also subject to extended outages between October 01, 2018 to November 11, 2018 due to a landslide and related road repair work in the area.

A photo of the upgraded station configuration is shown in Figure 2-2.

Map Document: C:\Users\dj\OneDrive - RWMAN WILLIAMS DAVIES & IRWIN INC\GIS Temp\1601625\1601625 - Confidential BC Hydro Climate Monitoring Locations\_Figure\_2-1\_Sep2017.mxd



## BC Hydro - Site C Meteorological and Air Quality Stations

True North



Drawn by: DJH | Figure: 2-1

Approx. Scale: 1:350,000

Date Revised: Feb 19, 2019



Map Projection: NAD 1983 UTM Zone 10N

Project #: 1601625



Figure 2-2: Upgraded Station 8 (Old Fort) with climate-controlled enclosure



Table 2-1: BC Hydro Site C network station locations and elevations

Station Name	UTM NAD 83 (m)	Latitude, Longitude (decimal degrees)	Elevation (m)
Station 1 - Attachie Flat Upper Terrace	597999 E, 6232919 N	56.23N, -121.42W	479
Station 3 - Attachie Plateau	595065 E, 6233032 N	56.23N, -121.46W	645
Station 4 - Bear Flat	610669 E, 6238135 N	56.27N, -121.21W	474
Station 6 - Farrell Creek	580779 E, 6220238 N	56.12N, -121.70W	471
7B/C - Site C North Camp/Fort St. John North Camp C	630127 E, 6230625 N	56.20 N, -120.90W	581
Station 8 - Old Fort	634890 E, 6230532 N	56.20N, -120.82W	423
Station 9 - 85 <sup>th</sup> Avenue	633033 E, 6233949 N	56.23N, -120.85W	686
Station 10 - Tea Creek <sup>(2)</sup>	626798 E, 6234314 N	56.24 N, -120.95W	653
Station 11 - Taylor <sup>(3)</sup>	639206 E, 6226964 N	56.17N, -120.76W	411
Fort St. John Airport (Environment and Climate Change Canada)	640053 E, 6234872 N	56.24N, -120.74W	695



Table 2-2: BC Hydro Site C network stations and the Fort St. John Airport ECCC station with parameters measured

Station	Air Temperature and Relative Humidity	Wind Speed and Direction	Precipitation	Barometric Pressure	All Radiation Components	Solar Radiation	Net radiation	Turbulent Fluxes	Visibility	Soil Temperature	Soil Moisture	Soil heat Flux	PM <sub>10</sub> and PM <sub>2.5</sub>	CO, SO <sub>2</sub> , NO <sub>2</sub>
Station 1 – Attachie Flat Upper Terrace	X	X	X	X	X			X	X	X	X	X	X	
Station 3 – Attachie Plateau	X	X	X	X		X	X			X	X	X		
Station 4 – Bear Flat	X	X	X	X	X			X		X	X	X		
Station 6 – Farrell Creek	X	X	X	X		X	X			X	X	X		
7B/C – Site C North Camp/Fort St. John North Camp C	X	X	X	X		X	X			X	X	X	X	X
Station 8 – Old Fort													X	
Station 9 – 85 <sup>th</sup> Avenue		X											X	
Station 10 – Tea Creek <sup>(2)</sup>	X	X	X	X	X		X			X	X	X		
Station 11 – Taylor <sup>(3)</sup>	X	X	X	X		X	X			X	X	X		
Fort St. John Airport (ECCC)	X	X	X	X	X									



## 2.1 Data Collection and Quality Assurance / Quality Control (QA/QC)

Measurements from the Site C network stations were remotely downloaded to RWDI servers using Campbell Scientific's LoggerNet software over cellular modem connections at the following intervals:

- Stations with AC power (Station 1 – Attachie Flat Upper Terrace, Station 4 – Bear Flat, Station 7C – The ambient air quality portion at Fort St. John North Camp C, Station 8 – Old Fort and Station 9 – 85<sup>th</sup> Avenue) had download intervals of one hour; and
- Solar powered stations (Station 3 – Attachie Plateau, Station 6 – Farrell Creek, Station 7B – The meteorological portion at Fort St. John North Camp C, Station 10 – Tea Creek and Station 11 – Taylor) had their data collected only at specific times during daylight hours to preserve battery charge.

The first stage of quality assurance applied to the data involved the data logger continually reading in and checking all instrumental diagnostics available from the air quality equipment for signs of an instrumental malfunction. Upon detection of a problem, the data logger can issue commands to the air quality instrument to rectify the problem and notify RWDI personnel of the problem so they can follow-up on it. It was included in the data logger programs of Station 1 (Attachie Flat Upper Terrace), Station 7C (Fort St. John North Camp C), Station 8 (Old Fort) and Station 9 (85<sup>th</sup> Avenue).

Manually assisted and automated quality control was carried out on the raw data weekly. This involved plotting the readings over the past month and the past 14 days to allow for a visual inspection so the operator can detect anomalous trends or data outliers. This frequency of QA was maintained to allow rapid detection and repair of any instrumental malfunctions.

As part of the RWDI data validation process, a third QA/QC operation was conducted monthly to invalidate any data from an instrument known to be malfunctioning based on the results of regular checks and station visits. Results from both checks performed by RWDI personnel as well as audits performed by the BC MECCS were used to increase confidence in the validity of the data.



### 3 METEOROLOGY RESULTS

Table 3-1 provides a summary of some of the parameters discussed in this report as well as 30-year climate normals from Fort St. John Airport for the period from 1981 to 2010 (ECCC, 2016). Climate normals were calculated from 30-year records of meteorological observations of wind speeds, temperature, precipitation and other related weather conditions at the location of interest. Climate normals are updated by ECCC on a 10-year basis and the most recent reporting period available is from 1981 to 2010. The 30-year climate normals for the maximum and minimum temperatures differ from what are reported in the published normals, because ECCC takes the daily maximum/daily minimum and averages that over the month for all years. These numbers averaged over the 30 annual maxima/minima in the period so they are more extreme and more comparable to the maximum and minimum temperatures at any one site for this year.

**Table 3-1: Summary of measured climate parameters during 2018 and comparison with climate normals**

Data Record	Mean Temperature (°C)	Maximum Temperature (°C)	Minimum Temperature (°C)	Total Precipitation (mm)	Mean Wind Speed (ms)
Station 1 (Attachie Flat Upper Terrace)	2.4	32.4	-38.6	508	2.2
Station 3 (Attachie Plateau)	2.5	32.0	-39.2	505	2.5
Station 4 (Bear Flat)	2.9	32.9	-36.8	368	1.5
Station 6 (Farrell Creek)	3.1	33.8	-38.3	516	1.4
Station 7B (Site C North Camp)	3.2	32.9	-34.1	461	2.7
Station 9 (85 <sup>th</sup> Avenue)	-	-	-	-	3.2
Station 10 (Tea Creek)	2.3	31.7	-36.7	405	2.3
Station 11 (Taylor)	2.5	33.8	-35.5	-	1.4
Fort St. John Airport (ECCC)	2.0	31.2	-35.5	601	4.3
Fort St. John Airport 30 year climate normals (1981 – 2010)	2.3	30.2	-36.6	445	3.8
Max difference of Site C stations from climate normals	0.9	3.6	2.6	77	2.4

**Notes:** — indicates insufficient or no data collected  
 (1) 30-year average of annual maximum hourly temperature  
 (2) 30-year average of annual minimum hourly temperature



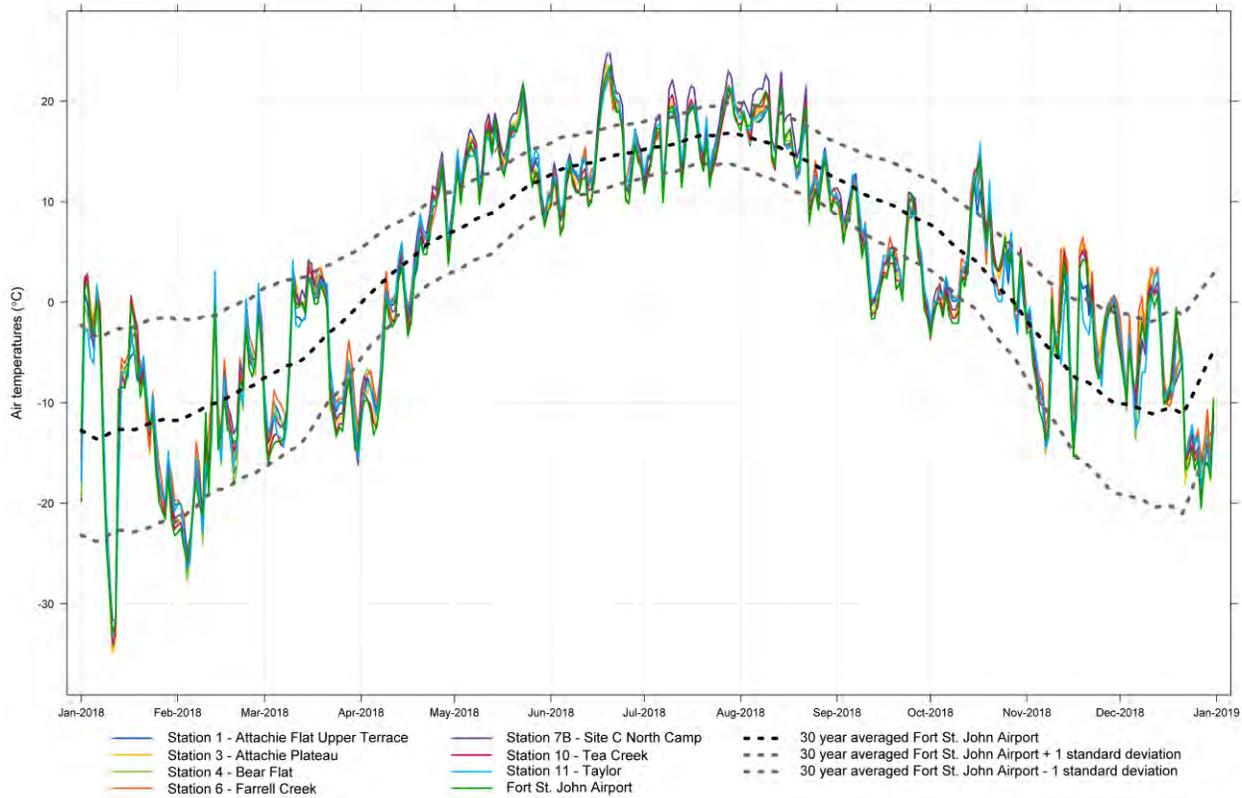
### 3.1 Air Temperature and Relative Humidity

Figure 3-1 shows a time series plot of the mean daily temperature at all Site C network stations as well as the Fort St. John Airport for 2018. As was noted in the previous monitoring reports (RWDI AIR Inc. 2015a, 2015b, 2015c, 2016, 2017, 2018), much greater day to day variability was observed in the winter months (January to March, and November and December) than in the summer months (April to October). This was also observed in the 30-year averaged observations from Fort St. John Airport and was attributed to the passage of warm and cold weather fronts in the winter, bringing with them large swings in temperature. In the summer, the cold arctic air masses that dominate in winter are much farther north and there is less frontal activity in the region, resulting in less extreme temperature fluctuations.

The inter-station variation was generally very small compared to the observed diurnal variations. When averaged over the entire year, the largest difference between any two stations was 1.2°C. Temperature differences of 1 to 2°C were found to be reasonable given that there is a maximum horizontal separation of 60 km between Fort St. John Airport and the most distant station in the network (Station 6 – Farrell Creek) and a maximum change in station elevations of 284 m (from 411 m at Station 11 - Taylor to 695 m at Fort St. John Airport).

Annual average temperatures for 2018 at all Site C network stations were greater than those reported at Fort St. John Airport. The annual average temperature recorded at Fort St. John Airport was 0.3°C colder than the 30-year climate normal for that station.

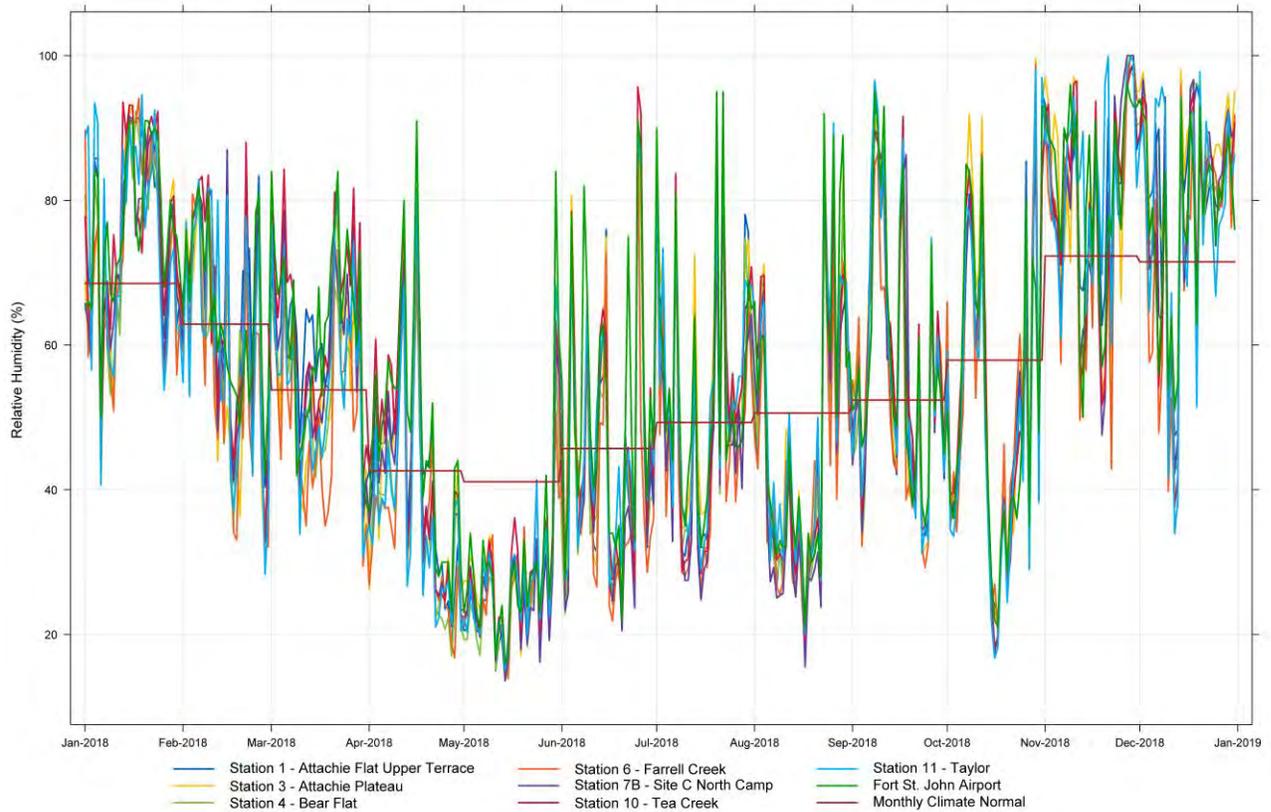
The monthly average temperatures tabulated in Appendix B (Table B-1) show that all Site C network stations recorded warmer temperatures than Fort St. John Airport from February to May, July, and September. There were no months during which all Site C network stations recorded colder temperatures than the Fort St. John Airport. Temperatures recorded at Fort St. John Airport were below the climate normals during February to April, June, September and October. Temperatures warmer than the climate normals were recorded at Fort St. John Airport in January, May, August, November and December.



**Figure 3-1: Daily average temperatures at all Site C network stations for the year 2018 and comparison with the mean  $\pm$  1 standard deviation of 30-year climate normal (based on 21-day centered rolling average) (in °C)**

Figure 3-2 shows a time-series of relative humidity (RH) recorded daily at 15:00 Mountain Standard Time (MST which equals Local Standard Time or LST) at each of the stations. This single hour of the day was used instead of a daily average due to the normally large fluctuation in RH that occurs over the course of a day and to allow comparisons with climate normals. Relative humidity at Station 10 (Tea Creek) most frequently had the highest monthly averaged values over all of the stations (seven months). Station 6 (Farrell Creek) was the station at which the monthly average RH was most frequently the lowest (nine months).

When compared to Fort St. John Airport (Appendix B, Table B-2), the annual average RH at all Site C stations were lower. Monthly average RH values over all of the stations were lower than observations from Fort St. John Airport in January, April, May and June. RH values recorded at Fort St. John Airport were less than the climate normals for May, August and October.



**Figure 3-2: Relative humidity at all Site C network stations measured daily at 15:00 LST for the year 2018 (in percent). The monthly climate normal is shown in brown**



## 3.2 Wind Characteristics

Wind speed and wind direction were measured at all stations except Station 8 (Old Fort). Figure 3-3 shows wind roses for all stations with a complete year of records including Fort St. John Airport for 2018. Mean annual wind speed for 2018 ranged from 1.4 m/s (Station 11 – Taylor) to 3.2 m/s (Station 9 – 85<sup>th</sup> Avenue) at the Site C network stations. Fort St. John Airport recorded a mean annual wind speed of 4.3 m/s which was 13% greater than the 30-year climate normal of 3.8 m/s (Table 3-1).

The differences between stations in wind speed and wind direction that are apparent in the wind roses are attributed to small scale surface features such as proximity of trees and local topography to the network stations and their location within the meandering Peace River Valley. The higher wind speed at Fort St. John Airport is likely due to this station being on the plateau above the Peace River Valley and its very open location with a large fetch in all directions. There was a wide difference of the proportion of calms as well: ranging from 0.4 % to 30.6% of the 12-month period.

Wind roses split by season from all stations with a complete year of data are included in Appendix C.

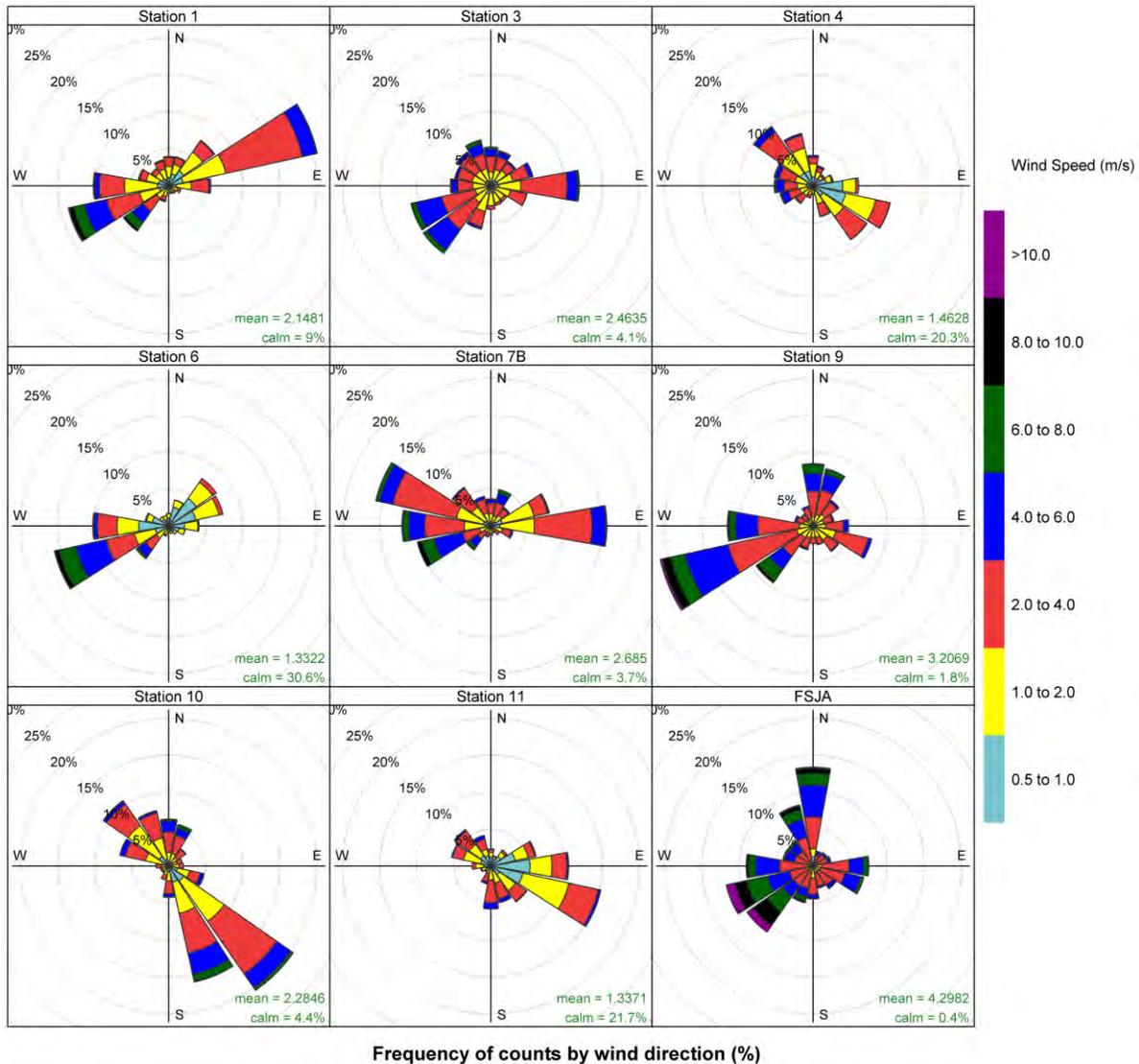


Figure 3-3: Wind roses for all Site C stations with 12-month records and Fort St John Airport for 2018



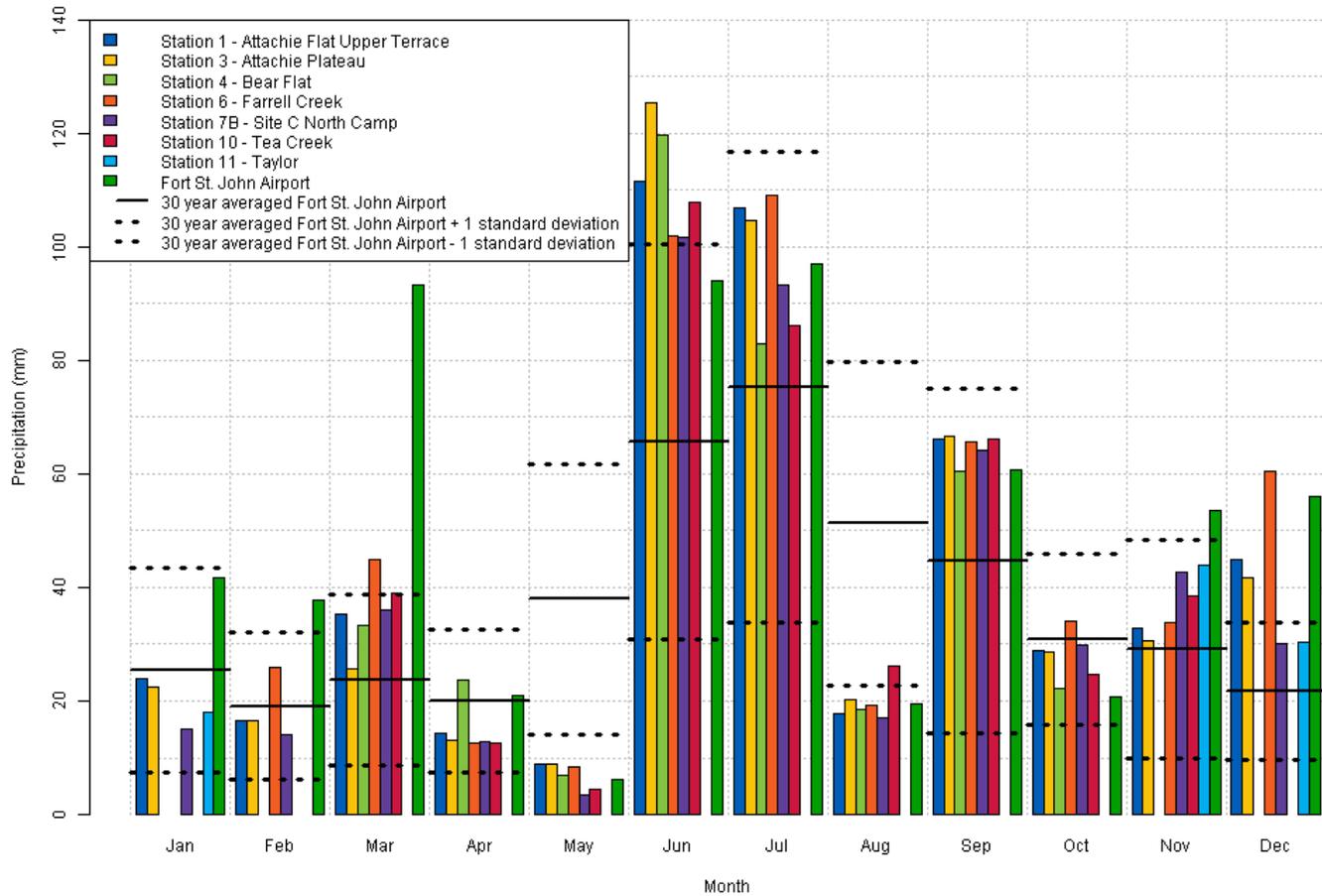
### 3.3 Precipitation

Figure 3-4 shows the total monthly precipitation over the course of 2018 for each of the Site C network stations as well as for Fort St. John Airport. The gauge measures precipitation in water equivalent (i.e., the snow is melted then the water level measured). As a general rule of thumb, under dry and cold conditions (typical of FSJ) the equivalent amount of snow would be roughly 10 times as much. Values from this plot are also presented in Appendix B (Table B-3). Monthly precipitation totals have not been presented for Station 4 (Bear Flat) for January, February, November and December; for Station 6 (Farrell Creek) for January; for Station 10 (Attachie Flat Lower Terrace) for January, February and December and for Station 11 for February through to October due to instrumental problems that caused a large portion of the data during these periods to be invalid. Annual totals are still included for these stations for indicative purposes only.

Of the Site C network stations, Station 6 (Farrell Creek) recorded the greatest amount of precipitation (516 mm). All of the Site C network stations recorded lower annual cumulative precipitation than the Fort St. John Airport. This is also true for monthly totals for the months of January, February, March and November. For the remaining months, the monthly totals from at-least one Site C network station were greater than recorded at Fort St. John Airport. The lower precipitation totals reported in the winter months for the Site C network reflect the remote measurement equipment which is based on a weighing style of precipitation gauges. The Fort St. John Airport totals appear to be based on the higher value from either a Nipher gauge and manual observations of fallen snow and total snow depth with a possible adjustment to these observations to account for factors that could lead to an underestimation of melted water equivalent, including wind under-catch, evaporation and wetting losses.

Annual cumulative precipitation recorded at Fort St. John Airport (601 mm) was 156 mm greater than the 30-year climate normal (445 mm). Monthly cumulative precipitation at Fort St. John Airport exceeded the 30-year climate normals for the months of January through April, June, July, September, November, and December. Elevated precipitation measurements reported for Fort St. John Airport for March (93.3 mm) were much higher when compared to 44.8mm recorded at Station 6 – the second highest reported total for March.

Precipitation during the growing season (May to September) and how it relates to the energy balance at Station 1 and Station 4 (Bear Flat) is further discussed in Appendix D.



**Figure 3-4: Monthly precipitation at all of the Site C network stations for 2018 and comparison with the mean ± 1 standard deviation of 30-year Fort St. John Airport climate normal**

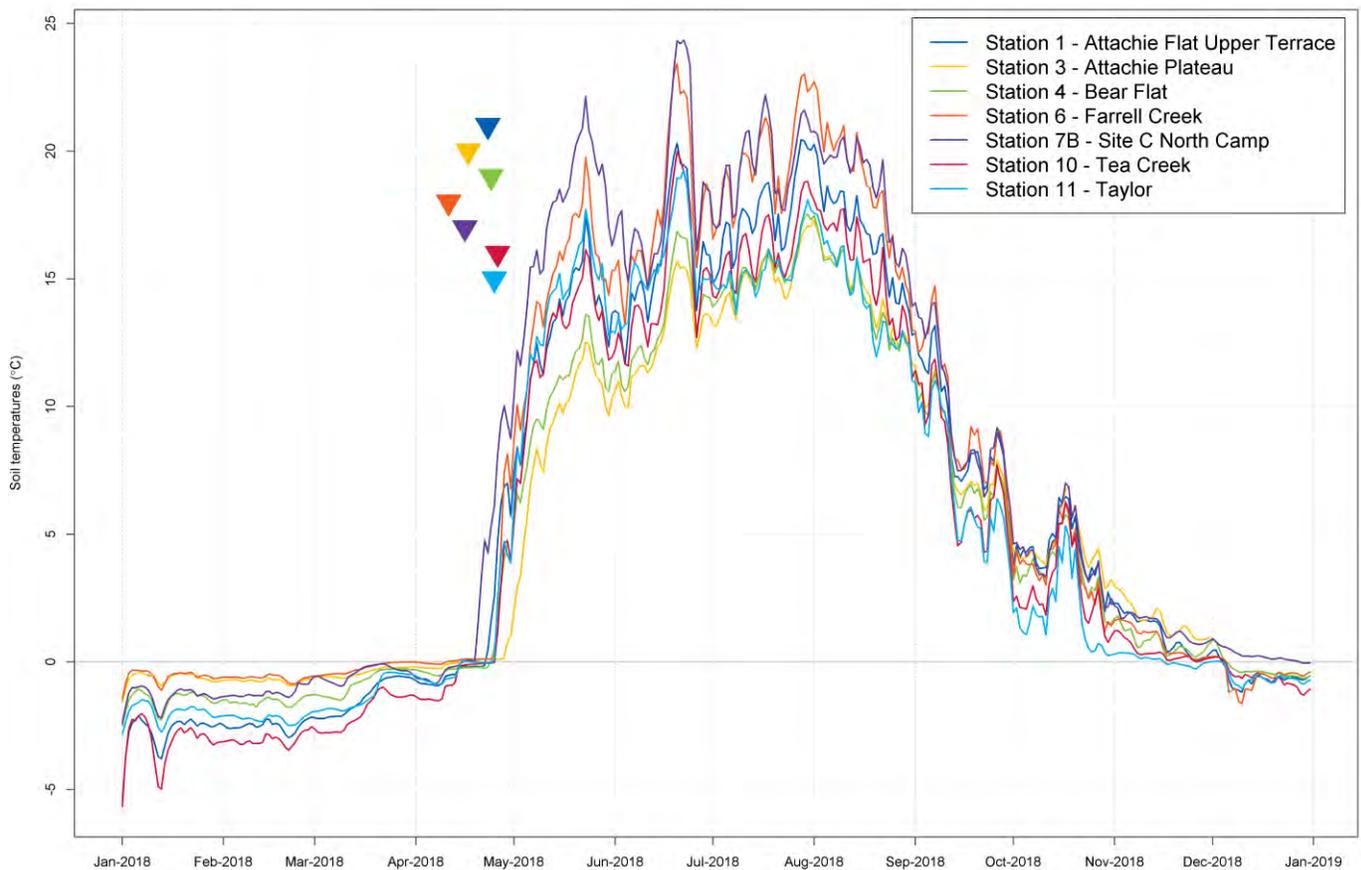
**Notes:** Monthly precipitation totals have not been presented for Station 4 (Bear Flat) for January, February, November and December; for station 6 (Ferrell Creek) for January; for Station 10 (Attachie Flat Lower Terrace) for January, February and December and for Station 11 for February through to October due to instrumental problems that caused a large portion of the data during these periods to be invalid. Annual totals are still included for these stations for indicative purposes only.



### 3.4 Soil Temperature and Moisture

Figure 3-5 and Figure 3-6 provide the daily averaged soil temperature and soil moisture, respectively. Total daily precipitation recorded at Station 1 (Attachie Flat Upper Terrace) is included in Figure 3-6 to link increases in soil moisture to incoming precipitation and to identify increases that are related to other processes. Station 1 was selected due to its most complete dataset and its somewhat central location within the Site C monitoring network. Overall, there is very little difference in soil temperature between the stations.

The soil temperature at all stations was observed to exceed 0°C in April. Station 6 (Farrell Creek) thawed the earliest, on April 11, and Station 10 (Tea Creek) thawed the latest, on April 26.

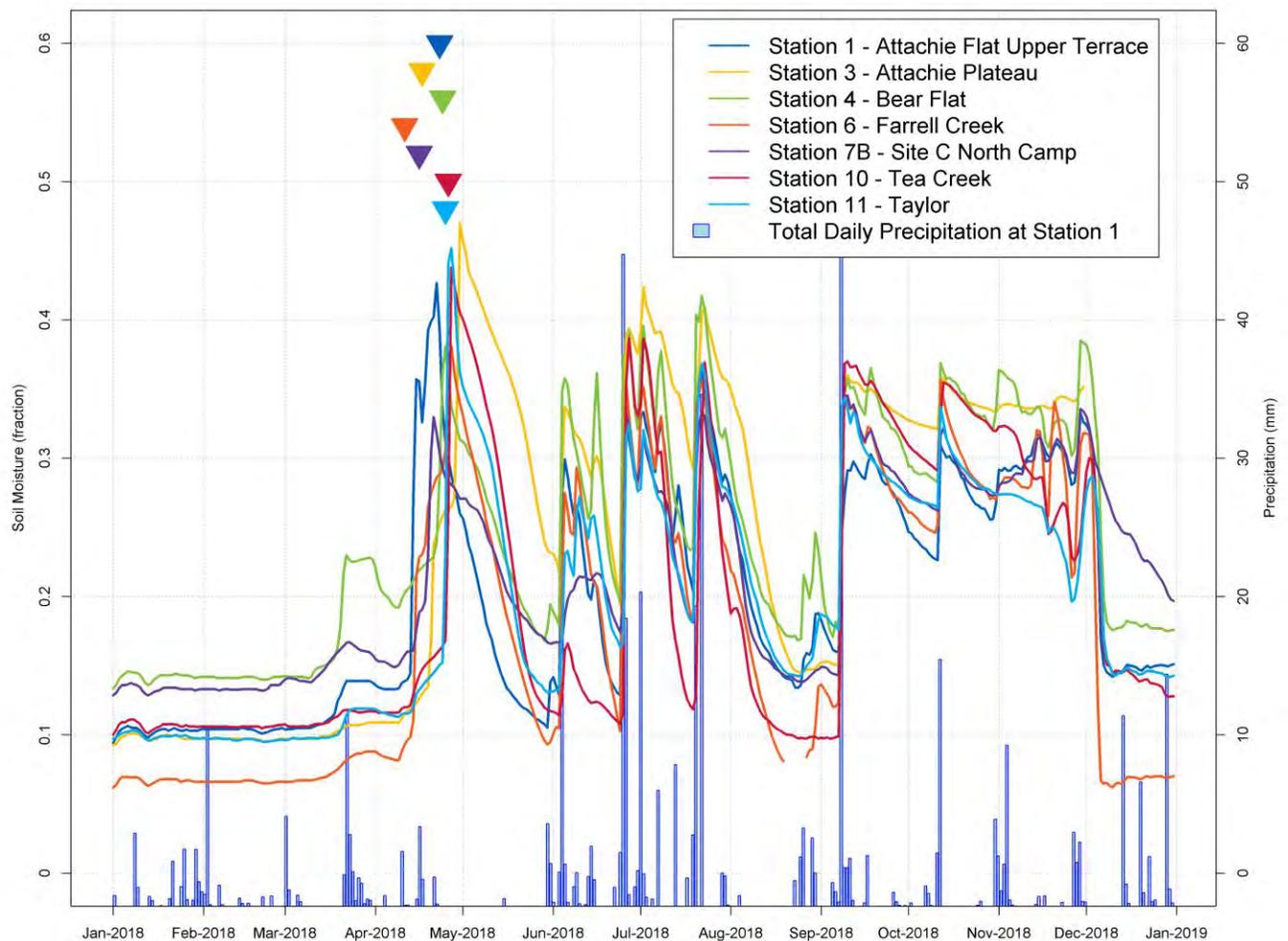


**Figure 3-5: 24-hour average soil temperatures (in °C) among the Site C network stations for 2018. The coloured triangles indicate the dates when daily averaged soil temperature exceeded 0°C at each one of the stations**



Soil moisture follows a similar response pattern between all stations wherein liquid precipitation (rain) events were clearly reflected as sudden increases in moisture followed by a gradual decline. An increase of soil moisture is also recorded when soil temperature increases beyond or very near to 0°C and the soil becomes permeable to surface water produced by the snowmelt. Differences between stations are attributable to different soil types and agricultural land management practices (Figure D-14) between stations.

Further discussion concerning soil temperatures and how this relates to the energy balance is presented in Appendix D.



**Figure 3-6: 24-hour average soil moisture readings (expressed as a decimal fraction of 1) among the Site C network stations for 2018. The coloured triangles indicate the dates when daily averaged soil temperature exceeded 0°C at each one of the stations**



## 3.5 Energy and Carbon Balance

The full eddy covariance (EC) report can be found in Appendix D and a summary is provided below.

### 3.5.1 Data Recovery

EC system uptime in 2018 was 93% at Station 1. This was a significant improvement over 2017 (70% uptime), due to less downtime required for calibration of the Li7500 instrument and improved site management. At Station 4, the annual EC system uptime improved from 77% in 2017 to 85% in 2018.

### 3.5.2 Results

In 2018, there was a cool start to the growing season similar to 2017 that was followed by a warm summer and fall with above average precipitation amounts spread evenly across the growing season. The growing season rainfall at Station 1 was 228 mm in 2017 and 312 mm in 2018, while the totals at Station 4 were 228 mm and 290 mm, respectively. Warm temperatures were experienced throughout the growing season and into fall in the region, resulting in 2018 being the warmest year on record.

The 2018 annual evapotranspiration (ET) totals at the two stations were the highest recorded and continue an upward trend which began in 2016. At Station 1, ET was measured (413 mm) to be 120 mm more than the lowest recorded ET at that location in 2012 (294 mm). At Station 4, ET was measured (433 mm) to be nearly 200 mm more than the lowest recorded ET at that location which was recorded in 2012 (235 mm). Comparatively, 2018 was a much wetter and warmer year at both locations and this is thought to largely explain the high ET. At Station 1, the land management remained the same for the aforementioned years while at Station 4 there was grazed pasture in 2012 and ungrazed pasture in 2018 and so it is likely that this had an impact on ET alongside climate related differences. It is hypothesized that the reduced vegetation cover resulting from grazing would reduce transpiration more than any increases in evaporation due to increased soil exposure.

In 2018, Station 1 was a modest Carbon-sink with annual net ecosystem production (NEP) of 139 g C m<sup>-2</sup>, while Station 4 was a small Carbon-source with annual NEP of -26 g C m<sup>-2</sup> (Figure D-11). The Carbon-sink potential at both locations was strongest during June, July and August. Thereafter, gains in gross ecosystem photosynthesis (GEP) can be seen to drop. The ET and GEP at both locations followed the same seasonal pattern with increasing photosynthetic activity resulting in increases in transpiration. It is likely that the higher monthly ecosystem respiration (R) at Station 4 is the result of decomposing plant residuals from the previous year when the pasture was not harvested. The difference in R at Station 4 compared to Station 1 later in the growing season was likely due to the harvesting of the forage crop during September at Station 4 resulting in a significant drop in GEP with potentially enhanced heterotrophic respiration from the residue and root die off.



## 4 AIR QUALITY RESULTS

Condition 12.3.4 of the FDS approval of the Project requires BC Hydro to develop a plan that includes procedures to monitor air quality effects at locations used by Indigenous groups. To this end, BC Hydro developed an Air Quality Monitoring Program (BC Hydro, 2016). As part of the monitoring program, BC Hydro installed and operates a network of air quality stations in areas that may be affected by Project construction activities.

BC Hydro currently operates four air quality monitoring stations in the Peace River area. Two of these stations are located in the vicinity of the Project construction including:

- Station 1 – Attachie Flat Upper Terrace; and
- Station 8 – Old Fort.

Two of these stations are located directly within Project construction work areas including:

- Station 7C –Fort St. John North Camp C; and
- Station 9 – 85th Avenue.

Stations 1, 8 and 7C have continuous Thermo Scientific SHARP 5030 and Station 9 has Thermo Scientific SHARP 5030i monitors. These monitors measure particulate matter with diameters less than 10  $\mu\text{m}$  ( $\text{PM}_{10}$ ) and 2.5  $\mu\text{m}$  ( $\text{PM}_{2.5}$ ). Station 7C –Fort St. John North Camp C also measures  $\text{NO}_x$  (using a Thermo Scientific 42i analyzer),  $\text{SO}_2$  (using a Thermo Scientific 43i analyzer) and CO (using a Thermo Scientific 48i analyzer).

Figure 2-1 and Table 2-1 provide the locations of all current air quality monitoring stations. Once construction of the shoreline protection berm begins in the area around Hudson's Hope (anticipated in 2020), an ambient air quality station will be installed there as well.

### 4.1 Particulate Matter

Table 4-1 gives an overview of the completeness of the datasets for  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  at each station as well as the number of excursions and/or exceedances above the provincial 24-hour ambient air quality objectives (AAQOs) and a comparison of the annual averages with the provincial annual AAQOs. An excursion is defined as when the 24-hour average of  $\text{PM}_{2.5}$  is greater than the 24-hour AAQO without the 98th percentile of daily  $\text{PM}_{2.5}$  exceeding the AAQO. An exceedance refers to  $\text{PM}_{10}$  values above the 24-hour AAQO. The lower percentage complete for 24-hour averages than for hourly data stems from a requirement that, to consider a 24-hour average to be valid, it must contain at least 75% (18 hours) of valid data. This ensures that 24-hour averages are not biased toward one single time of the day. Unless specified otherwise, the 24-hour average refers to the daily block average from the 01:00 hour to the 00:00 hour-ending timestamp of the following day. The 75% data completeness criteria established by the Government of Canada for fine particulate matter ( $\text{PM}_{2.5}$ ) can be found at: <http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=BA9D8D27-1&offset=4&toc=hide&pedisable=true>. Per the MOU with the BC MECCS, there is a data polling requirement of 90%. In other words, 90% of the time the Province will successfully poll data from BC Hydro's sites and display air quality readings on the Ministry's air quality public portal within an hour of when the observation is collected at the site. In 2018, the 90% data polling criteria was met.



Many of the excursions and exceedances in 2018 were related to smoke from forest fires or community specific events such as road dust. In these cases, the BC MOE issued Smoky Skies Bulletins and Air Quality Advisories, respectively. Specific dates for these in 2018 are provided later in this section.

Table 4-2 provides percentile levels of note for concentrations of particulate matter at each of the air quality stations. Measured PM<sub>10</sub> levels at Station 1 (Attachie Flat Upper Terrace) and PM<sub>2.5</sub> at Station 8 (Old Fort) were below their respective AAQO for 99% of valid days or more in 2018. Measured PM<sub>2.5</sub> levels at Station 7 C (Fort St. John North Camp C) and PM<sub>10</sub> at Station 8 (Old Fort) were below the AAQO for 98% of valid days. Measured PM<sub>2.5</sub> concentrations at Station 1 (Attachie Flat Upper Terrace) and PM<sub>2.5</sub> and PM<sub>10</sub> at Station 9 (85<sup>th</sup> Avenue) were below their respective AAQO more than 97.5% of valid days. Measured PM<sub>10</sub> concentrations at Station 7 C (Fort St. John North Camp C) exceeded the 24-h AAQO for fewer than 90% of valid days.

All particulate monitors had a data completeness of greater than 75% (typical of BC MECCS permit requirements).

Eleven excursions above the 25 µg/m<sup>3</sup> AAQO and seven exceedances of the AAQO for PM<sub>10</sub> for a 24-hour averaging period were observed at Station 1 (Attachie Flat Upper Terrace) in 2018. Eight excursions above the AAQO for PM<sub>2.5</sub> and 44 exceedances of the AAQO for PM<sub>10</sub> both over 24-hour averaging periods were observed at Station 7C (Fort St. John North Camp C). At Station 8 (Old Fort), two excursions above the 24-hour AAQO for PM<sub>2.5</sub> and eight exceedances above the 24-hour AAQO for PM<sub>10</sub> were observed. Fifteen excursions above the 24-hour AAQO for PM<sub>2.5</sub> and eleven exceedances above the 24-hour AAQO for PM<sub>10</sub> were observed at Station 9 (85<sup>th</sup> Avenue).

Station 1 (Attachie Flat Upper Terrace), Station 7C (Fort St. John North Camp C) and Station 9 (85<sup>th</sup> Avenue) recorded exceedances of the 98<sup>th</sup> percentile of PM<sub>2.5</sub> over the provincial AAQO of 25 µg/m<sup>3</sup>. The annual average B.C. provincial AAQO of 8 µg/m<sup>3</sup> for PM<sub>2.5</sub> was exceeded at Station 9 (85<sup>th</sup> Avenue) in 2018.

**Table 4-1: Summary of measured PM results for 2018 (in µg/m<sup>3</sup>)**

Parameter	Station 1		Station 7C		Station 8		Station 9	
	PM <sub>2.5</sub>	PM <sub>10</sub>						
Percentage data complete of hourly data	95.2	95.2	94.5	97.9	84.3	89.8	86.3	95.7
Percentage data complete (24-hour averages)	95.3	94.8	94.5	98.4	84.7	90.4	85.8	95.3
24-hour AAQO	25	50	25	50	25	50	25	50
Total 24-hour AAQO excursions / exceedances <sup>(1)</sup>	11	7	8	44	2	8	15	11
98 <sup>th</sup> percentile of 24-hour daily averages	<b>40.9</b>	<b>46.5</b>	<b>31.3</b>	<b>152</b>	17.9	<b>52.1</b>	<b>53.3</b>	<b>57.4</b>
Annual AAQO	8	NA <sup>(2)</sup>						
Annual average	6.1	9.1	7.0	25.9	5.8	12.3	<b>8.5</b>	13.4

**Notes:** Bolded PM values indicates measured concentrations that exceeded their respective AAQO

(1) Excursion is used here for PM<sub>2.5</sub> when the 24-hour average of PM<sub>2.5</sub> is greater than the 24-hour AAQO without the 98<sup>th</sup> percentile of daily PM<sub>2.5</sub> exceeding the AAQO. Exceedance is used here to refer to PM<sub>10</sub> values above the 24-hour AAQO.

(2) NA is used where the quantity in question is not applicable to the measurement.



**Table 4-2: Percentile values of 24-hour averaged PM concentrations for 2018 (in  $\mu\text{g}/\text{m}^3$ )**

Percentile	Station 1 Attachie Flat Upper Terrace		Station 7C Fort St. John North Camp C		Station 8 Old Fort		Station 9 85 <sup>th</sup> Avenue	
	PM <sub>2.5</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>
0	0.002	0.04	0.04	0.5	0.03	0.2	0.5	1.1
0.1	0.6	1.8	1.4	4.5	1.1	2.8	1.8	3.2
0.25	1.7	3.2	2.5	7	2.5	4.6	2.9	5
0.5	3.4	5.6	4.7	13	4.5	8.6	5	8.5
0.75	6.3	10	7.8	28.1	7.4	14.2	8.5	15.3
0.9	9.8	17.4	12.4	56.6	11.5	23	14.6	26.9
0.95	15.2	25.1	15.1	97.7	14.4	32.5	23.1	36.1
0.975	32.2	38.6	24.6	135	17.2	44.2	44.9	53.3
0.98	40.9	46.5	31.3	152	17.9	52.1	53.3	57.4
0.99	59	62.7	56.9	183	23.5	78.5	79.3	89.8
0.999	138	148	149	255	78.4	152	158	172

**Notes:** Red cells denote values greater than the AAQO

Figure 4-1 through Figure 4-4 show the time series of the 24-hour daily average of both PM<sub>10</sub> and PM<sub>2.5</sub> at each of the four AQ stations, respectively. Table 4-3 lists the events that led to excursions or exceedances at the four monitoring stations and directs the reader to the appropriate section of Appendix E where a preliminary examination of each elevated PM event is presented. Note that some of these events persisted over more than one day.

The 2018 calendar year featured an active wildfire season during which one major smoke event affected the Peace region. Smoky Skies Bulletins were issued as well as amended/re-amended for Jul 29-Aug 27 based on the potential for regional impact from wildfire smoke.

Along with the potential impact of smoke from the wildfires, Fort St. John was affected by dust advisories caused by dry road conditions and high winds which triggered regional air quality advisories on Apr 23 – 29.

These advisories provide important regional context for the air quality exceedances recorded by stations in the Site C monitoring network. Events observed at more than one station can be considered regional in nature and more likely to be related to forest fires or dusty roads; whereas, events recorded at only one station such as at the main Project dam construction site, Station 7C (Fort St. John North Camp C) are more likely to originate from a local particulate emission source.

An email alerting system operated for the duration of 2018 to immediately notify BC Hydro and its contractors about any excursions taking place so they could work to identify the source and mitigate its associated effects if it was found to be related to their operations. As of December 31, 2018, the distribution list for the alerting system included 59 individuals representing 18 firms, including the Project's Independent Environmental Monitor (EDI Environmental Dynamics Inc.). A discussion for each alert received and the site contractor response to the alert can be found in Table E-1 of Appendix E.



Appendix F includes three figures that present examples of active mitigation by the site contractor to suppress roadway dust emissions. A brine mixture of calcium chloride and water was applied by the Main Civil Works contractor, Peace River Hydro Partners (PRHP), on May 13, July 29 and again on October 18, 2018 on several of the dam site construction roads as indicated on the figures. Water was also used routinely as a dust suppressant throughout the Project's active construction areas on several occasions in 2018. Hydro-seeding of areas with no vegetation was also completed to stabilize disturbed soil and prevent erosion and control fugitive dust emissions. Appendix F includes a figure of the areas hydro-seeded by PRHP at the dam site. Details of all completed mitigation measures, contractor inspection comments coupled with air quality alerts, and BC MOE-issued Smoky Skies Bulletins and Air Quality Advisories are all included in Table E-1.

Open burning of piles of vegetation cleared in the footprint of the future Site C reservoir occurred in 2018. Four ignition events occurred during the year including:

- 20 March – 70 piles in the Lower Reservoir;
- 28 March – 88 piles in the Lower Reservoir;
- 27 April – 54 piles on Tea Island; and
- 11 December – 55 piles in the Lower Reservoir.

One event occurred for the Transmission Line:

- 29 June – 178 piles along the corridor

In total, approximately 75 hectares were ignited in the Lower Reservoir, and 18 hectares on Tea Island, based on custom venting forecasts which were used to inform brush burning events. The areas that were ignited are shown in Figure 4-5.

Custom venting forecasts provided by the Ministry of Forests, Lands and Natural Resource Operations and were used to inform all ignition events. A Qualified Environmental Professional (QEP) sent out advance notification for every ignition event to the stakeholder list included as Appendix A in the Smoke Management Plan (Revision 2) (BC Hydro, 2016). Notices were also included in publications (e.g. notifications to First Nations, biweekly construction bulletins, etc.) distributed by the BC Hydro public relations team.



**Table 4-3: Summary of PM excursion or exceedance events recorded at Site C in 2018**

Start Date	End Date	Station	Contaminant	Event Number
2018-02-27	2018-02-27	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	110
2018-03-01	2018-03-02	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	111
2018-03-12	2018-03-15	Station 9 - 85th Avenue	PM <sub>2.5</sub>	112
2018-03-14	2018-03-15	Station 9 - 85th Avenue	PM <sub>10</sub>	113
2018-03-31	2018-04-01	Station 7C – Fort St. John North Camp C	PM <sub>2.5</sub>	114
2018-03-31	2018-04-01	Station 8 - Old Fort	PM <sub>2.5</sub>	115
2018-04-14	2018-04-16	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	116
2018-04-20	2018-04-22	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	117
2018-04-22	2017-04-28	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	118
2018-04-28	2018-04-29	Station 8 - Old Fort	PM <sub>2.5</sub>	119
2018-04-28	2018-04-28	Station 8 - Old Fort	PM <sub>10</sub>	120
2018-05-02	2018-05-04	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	121
2018-05-11	2018-05-15	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	123
2018-05-20	2018-05-23	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	124
2018-05-24	2018-05-29	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	125
2018-06-02	2018-06-03	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	127
2018-06-18	2018-06-19	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	128
2018-06-20	2018-06-21	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	129
2018-07-06	2018-07-07	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	130
2018-07-16	2018-07-18	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	131
2018-07-27	2018-07-29	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	132
2018-08-07	2018-08-11	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	135
2018-08-06	2018-08-11	Station 9 - 85th Avenue	PM <sub>2.5</sub>	136
2018-08-08	2018-08-15	Station 8 - Old Fort	PM <sub>2.5</sub>	137
2018-08-08	2018-08-11	Station 9 - 85th Avenue	PM <sub>10</sub>	138
2018-08-09	2018-08-11	Station 1 - Attachie Flat Upper Terrace	PM <sub>2.5</sub>	139
2018-08-09	2018-08-11	Station 8 - Old Fort	PM <sub>10</sub>	140
2018-08-09	2018-08-11	Station 1 - Attachie Flat Upper Terrace	PM <sub>10</sub>	141



Start Date	End Date	Station	Contaminant	Event Number
2018-08-14	2018-08-26	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	142
2018-08-14	2018-08-26	Station 9 - 85th Avenue	PM <sub>2.5</sub>	143
2018-08-14	2018-08-26	Station 9 - 85th Avenue	PM <sub>10</sub>	144
2018-08-14	2018-08-26	Station 1 - Attachie Flat Upper Terrace	PM <sub>2.5</sub>	145
2018-08-14	2018-08-25	Station 8 - Old Fort	PM <sub>10</sub>	146
2018-08-15	2018-08-26	Station 7C – Fort St. John North Camp C	PM <sub>2.5</sub>	147
2018-08-15	2018-08-26	Station 1 - Attachie Flat Upper Terrace	PM <sub>10</sub>	148
2018-09-02	2018-09-03	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	149
2018-09-04	2018-09-05	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	150
2018-10-04	2018-10-04	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	151
2018-10-16	2018-10-18	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	153
2018-10-20	2018-10-21	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	154
2018-10-22	2018-10-26	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	155
2018-10-23	2018-10-24	Station 9 - 85th Avenue	PM <sub>10</sub>	156
2018-10-29	2018-10-30	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	158
2018-10-31	2018-10-31	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	159
2018-11-04	2018-11-05	Station 7C – Fort St. John North Camp C	PM <sub>10</sub>	160
2018-11-15	2018-11-15	Station 8 - Old Fort	PM <sub>2.5</sub>	161
2018-11-15	2018-11-15	Station 7C – Fort St. John North Camp C	PM <sub>2.5</sub>	162
2018-11-15	2018-11-15	Station 9 - 85th Avenue	PM <sub>2.5</sub>	163
2018-11-21	2018-11-22	Station 7C – Fort St. John North Camp C	PM <sub>2.5</sub>	164
2018-11-21	2018-11-22	Station 8 - Old Fort	PM <sub>2.5</sub>	165
2018-12-07	2018-12-07	Station 8 - Old Fort	PM <sub>2.5</sub>	166

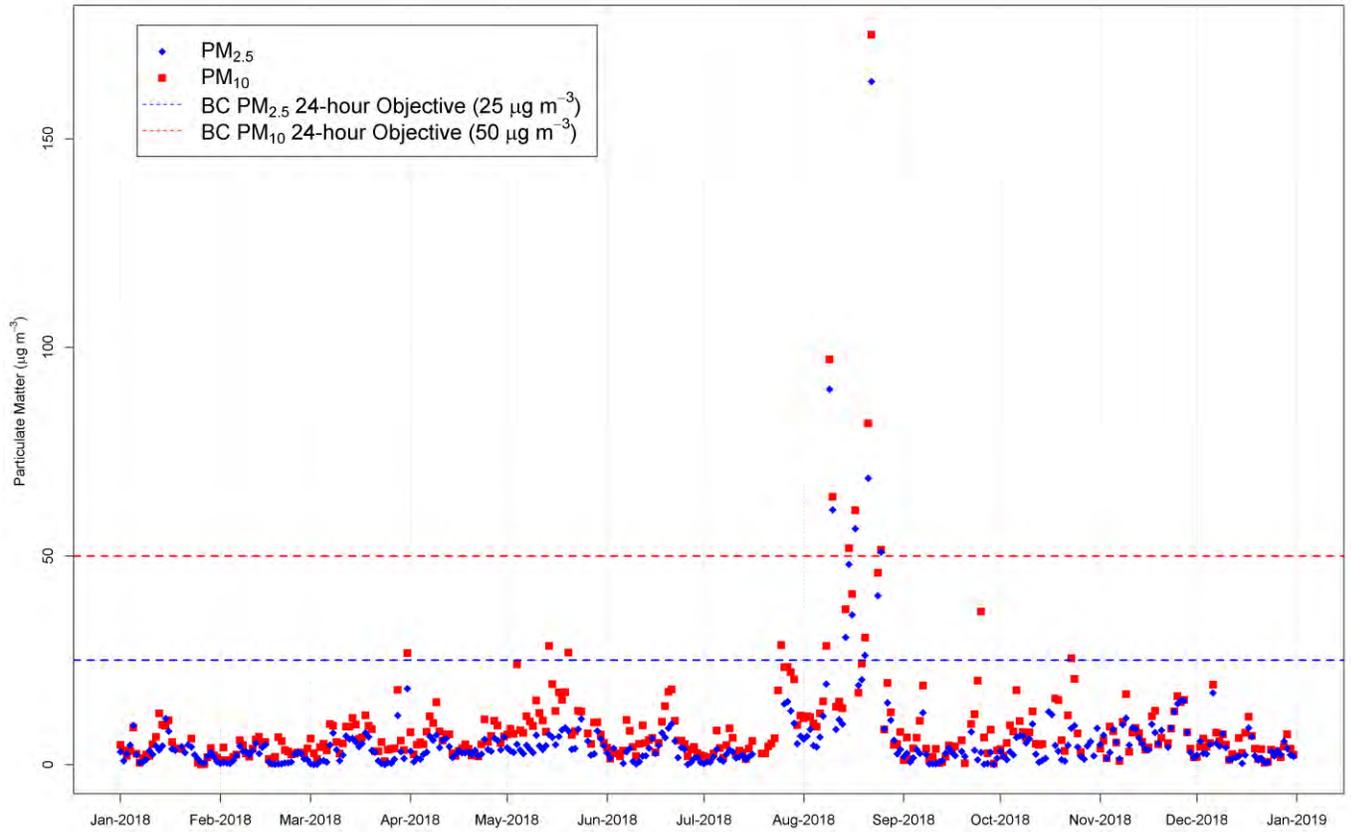
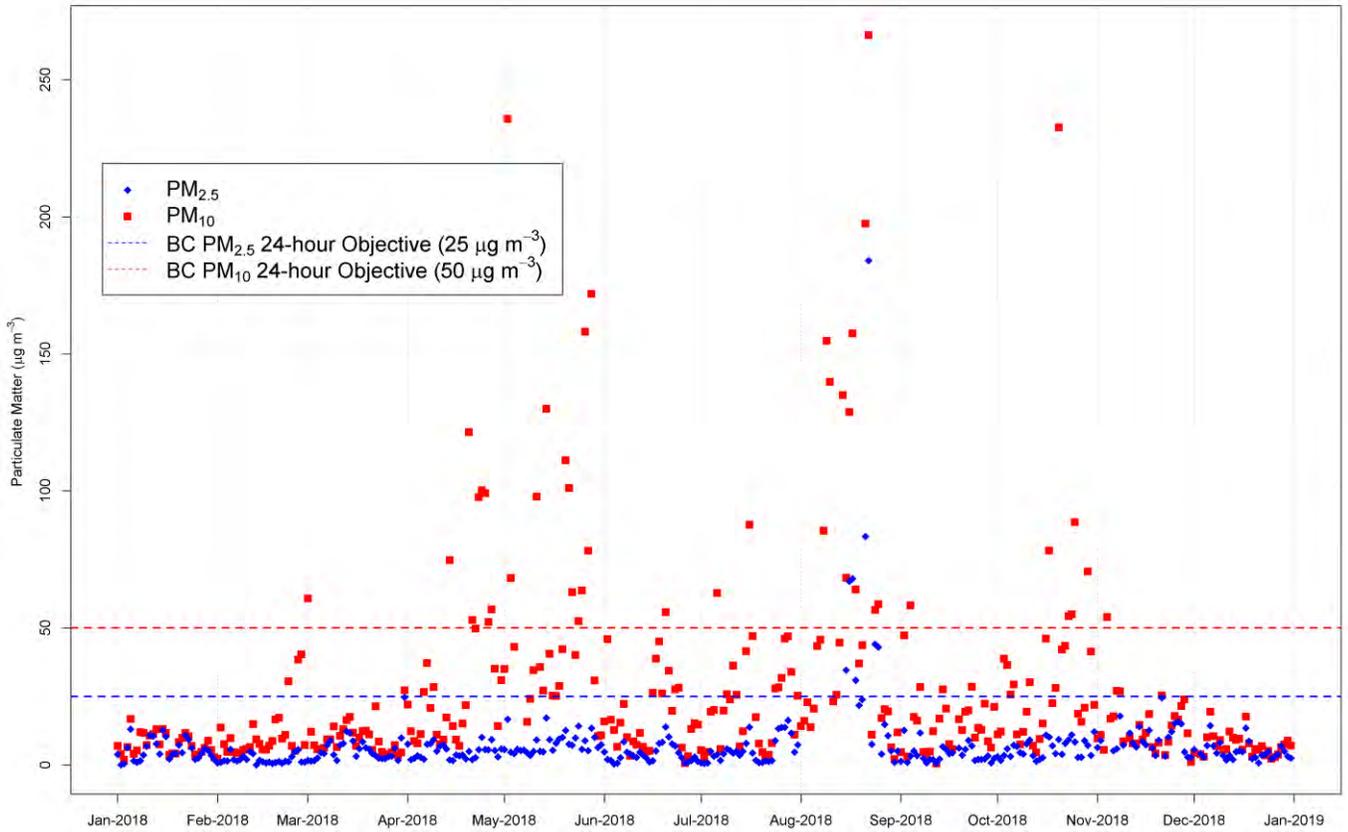


Figure 4-1: Daily average PM<sub>2.5</sub> and PM<sub>10</sub> measurements from Station 1 – Attachie Flat Upper Terrace for 2018 (in µg/m<sup>3</sup>). The target AAQO's are plotted as broken lines



**Figure 4-2: Daily average PM<sub>2.5</sub> and PM<sub>10</sub> measurements from Station 7C – Fort St. John North Camp C for 2018 (in µg/m<sup>3</sup>). The target AAQO's are plotted as broken lines**

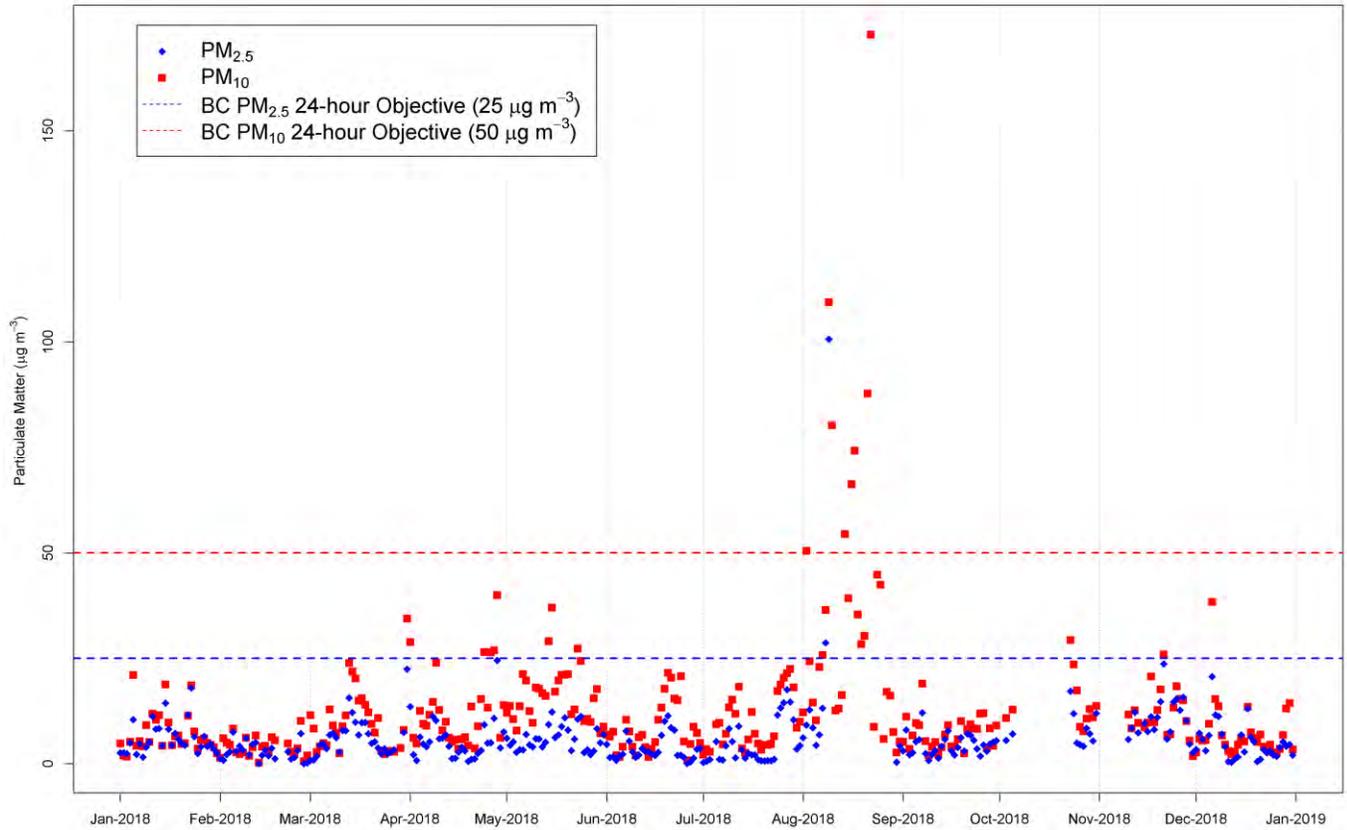


Figure 4-3: Daily average  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  measurements from Station 8 - Old Fort for 2018 (in  $\mu\text{g}/\text{m}^3$ ). The target AAQO's are plotted as broken lines

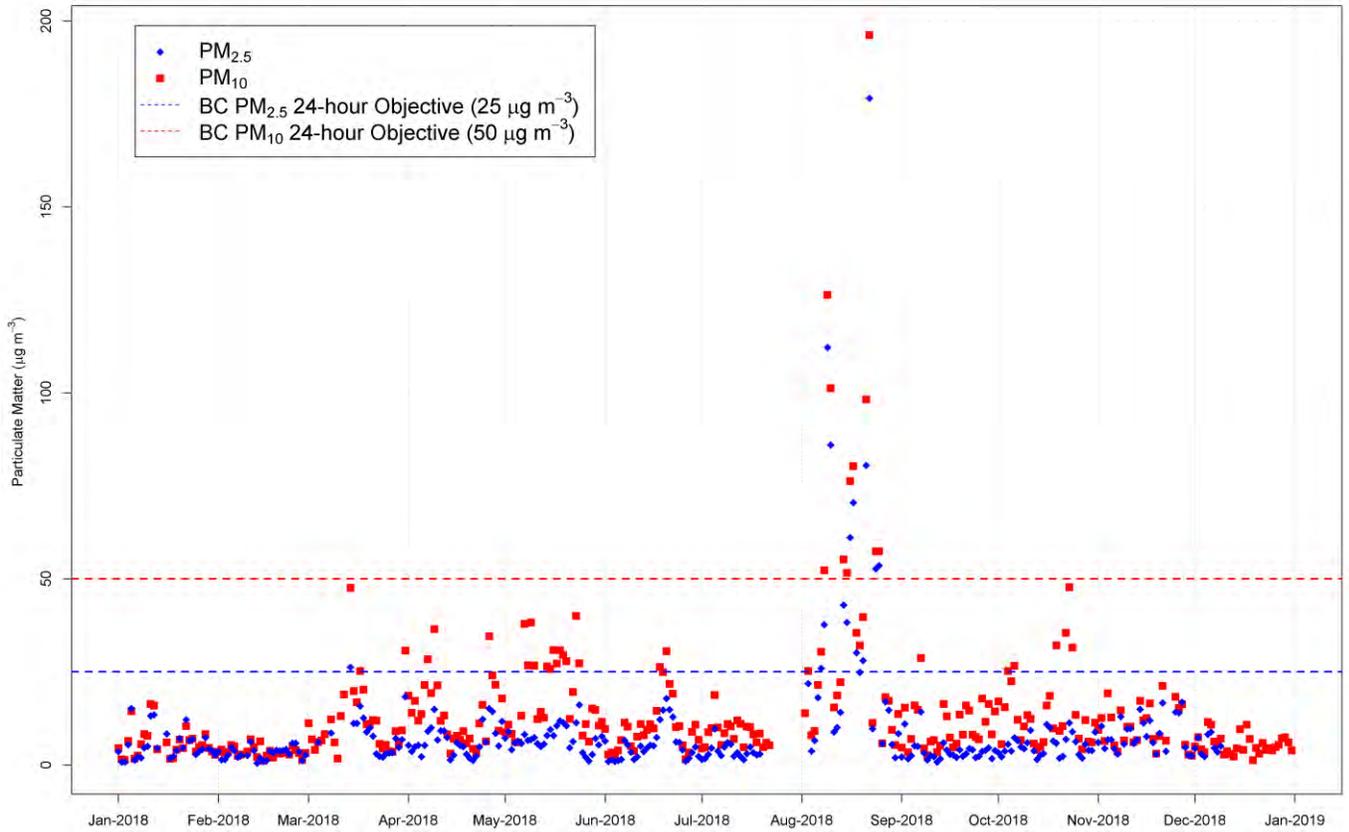
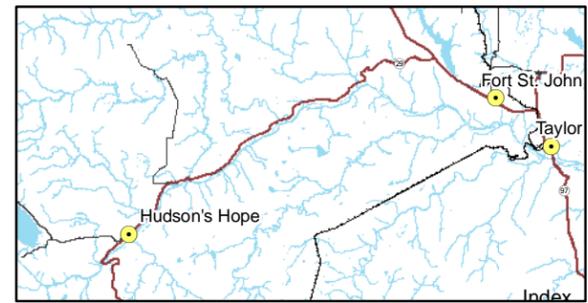
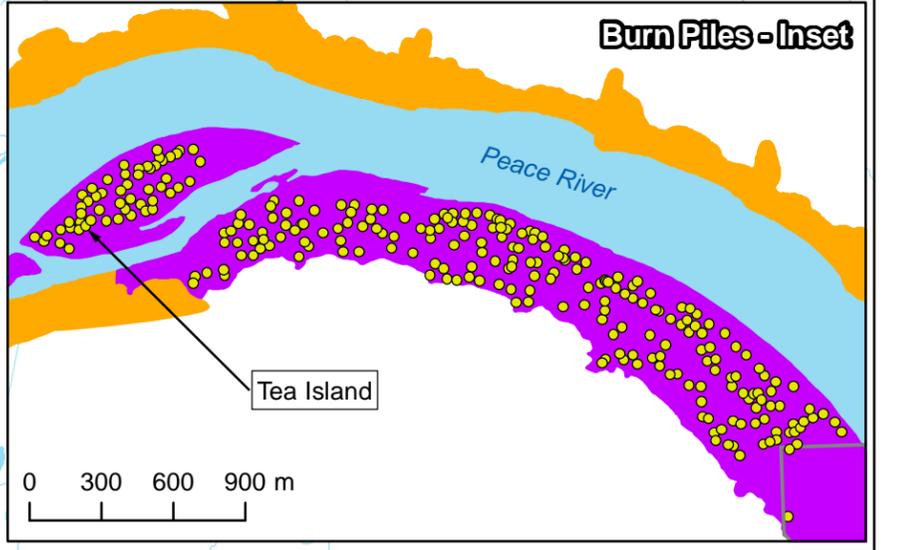
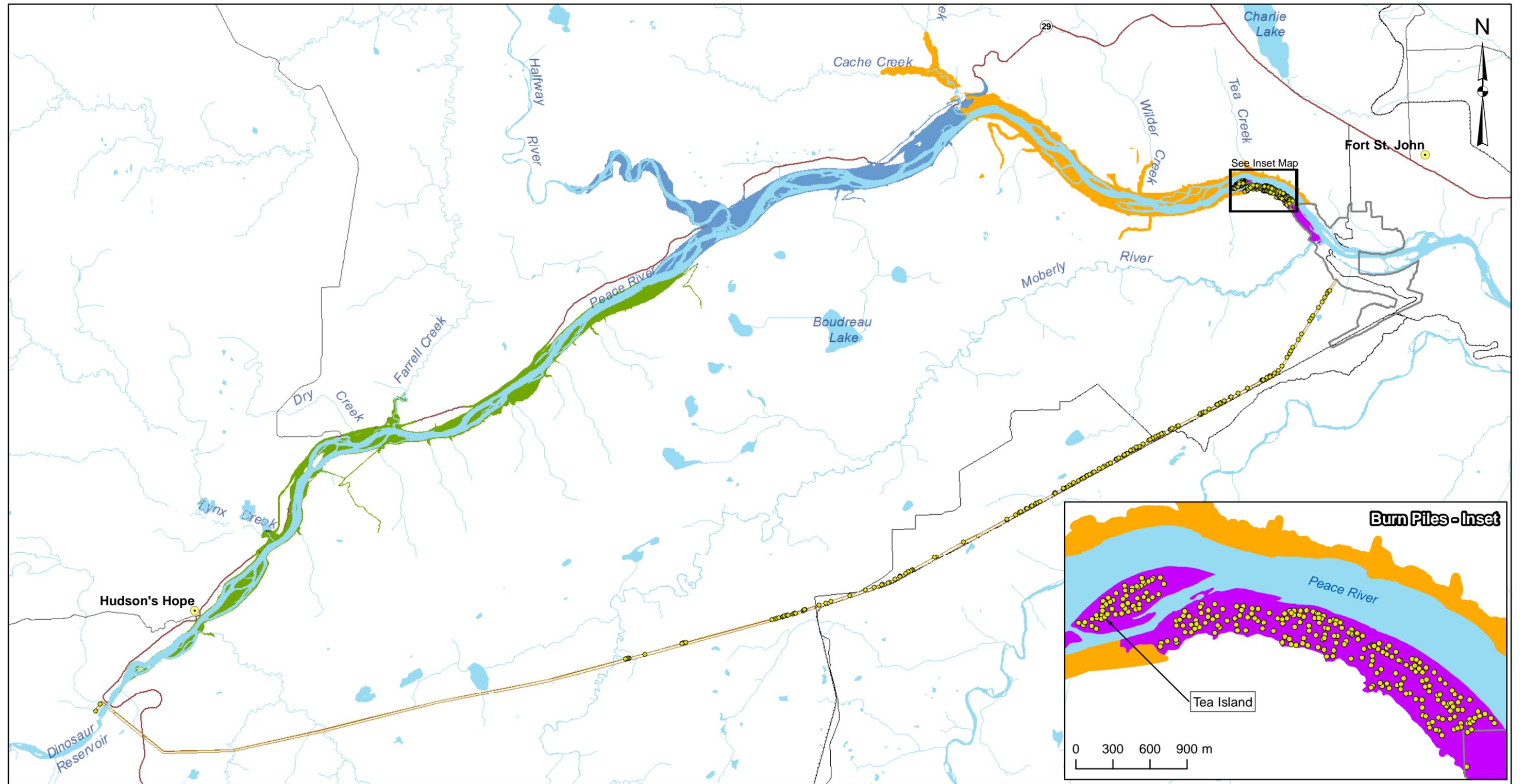


Figure 4-4: Daily average PM<sub>2.5</sub> and PM<sub>10</sub> measurements from Station 9 - 85th Avenue for 2018 (in µg/m<sup>3</sup>). The target AAQO's are plotted as broken lines



Map Notes:  
 1. Datum: NAD83  
 2. Projection: UTM Zone 10N  
 3. Base Data: Province of B.C.

- Legend**
- Piles - Burned
  - Transmission Corridor
  - Road
  - Highway
  - Western Reservoir
  - Middle Reservoir
  - Eastern Reservoir
  - Lower Reservoir
  - Dam Site Area

0 10 km  
 1:200,000

**BC Hydro**

**Figure 4-5**  
**2018 Burn Piles**

Date	Feb. 21, 2019	DWG NO	1016-N11-00325	R 0
------	---------------	--------	----------------	-----

Path: X:\Acad\Projects\Environment\Physical\_Environment\BurnPiles\_1016\_N11\_00325.mxd



## 4.2 Gaseous Criteria Air Contaminants

Table 4-4 gives an overview of the completeness of the datasets for gaseous criteria air contaminants (CO, NO<sub>2</sub> and SO<sub>2</sub>) measured at Station 7C (Fort St. John North Camp C) as well as the number of any excursions and/or exceedances above the provincial AAQOs and a comparison of the annual averages with the provincial AAQOs.

For CO, a value is an exceedance once it is greater than the provincial Pollution Control Objectives (PCOs); whereas, for NO<sub>2</sub> and SO<sub>2</sub>, there is only an exceedance if the 98<sup>th</sup> and 97<sup>th</sup> percentile of daily 1-hour maxima in the year is greater than their AAQOs, respectively. If this condition has not been met, values above the respective AAQOs do not constitute exceedances and are classified only as excursions.

**Table 4-4: Summary of gaseous criteria air contaminant results for 2018 (in µg/m<sup>3</sup>)**

Parameter or Metric	NO <sub>2</sub>	SO <sub>2</sub>	CO	CO (8-hour Rolling average)
Percentage data complete	97.8	98.9	98.8	99.3
1-hour AAQO	113	196	14,300	NA <sup>(1)</sup>
8-hour AAQO	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	5,500
Number of AAQO Exceedances / Excursions <sup>(2)</sup>	0	0	0	0
Annual AAQO	32	13 <sup>(3)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Annual Average	7.7	1.0	171	171
98 <sup>th</sup> percentile of Daily 1 Hour Maximum	50.6	26.4	NA <sup>(1)</sup>	NA <sup>(1)</sup>

**Notes:** (1): NA is used where the quantity in question is not applicable to the measurement.  
 (2): The term excursion is used here for NO<sub>2</sub> and SO<sub>2</sub> when the daily 1-hour maximum is greater than their respective AAQO but without satisfying the 98<sup>th</sup> or 97<sup>th</sup> percentile condition for achievement.  
 (3): Achievement based on annual average of 1-hour concentrations over one year, effective January 1, 2020. Used to inform new air management decisions beginning January 1, 2017 and all air management decisions beginning January 1, 2020.

No excursions of the 1-hour SO<sub>2</sub> and 1-hour NO<sub>2</sub> AAQOs were observed in 2018. There were also no observed exceedances of the 1-hour or 8-hour PCOs for CO in 2018. The annual average NO<sub>2</sub> and SO<sub>2</sub> concentrations were well below their respective annual AAQOs.

Figure 4-6 through Figure 4-8 show the daily 1-hour maximum concentrations of NO<sub>2</sub> and SO<sub>2</sub>, as well as the 1-hour and 8-hour rolling average CO concentrations, respectively. The maximum NO<sub>2</sub> concentration of 67.4 µg/m<sup>3</sup> was recorded on March 31, the maximum SO<sub>2</sub> concentration of 90.9 µg/m<sup>3</sup> was recorded on November 21 and the CO concentration recorded both its one-hour and 8-hour rolling average maxima of 1920 µg/m<sup>3</sup> and 1540 µg/m<sup>3</sup> on August 22.

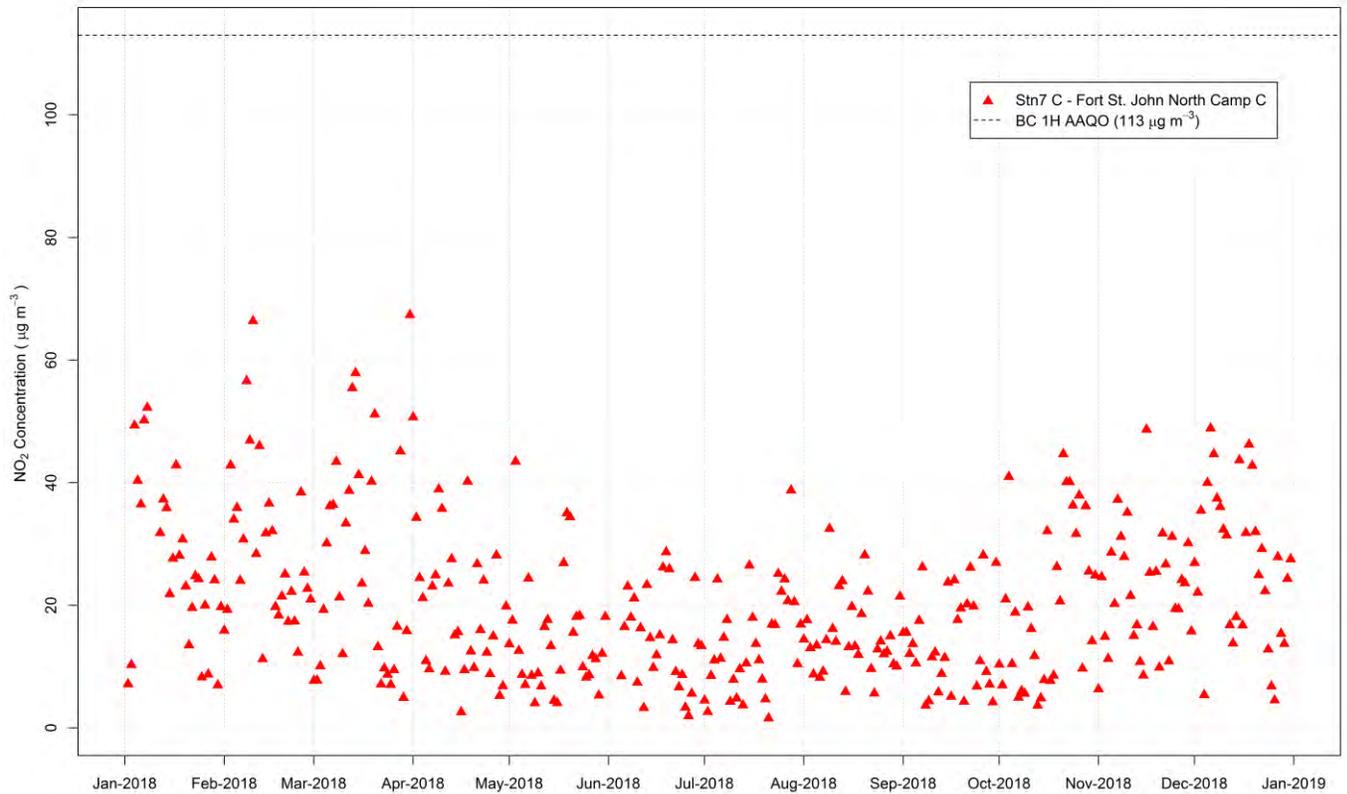
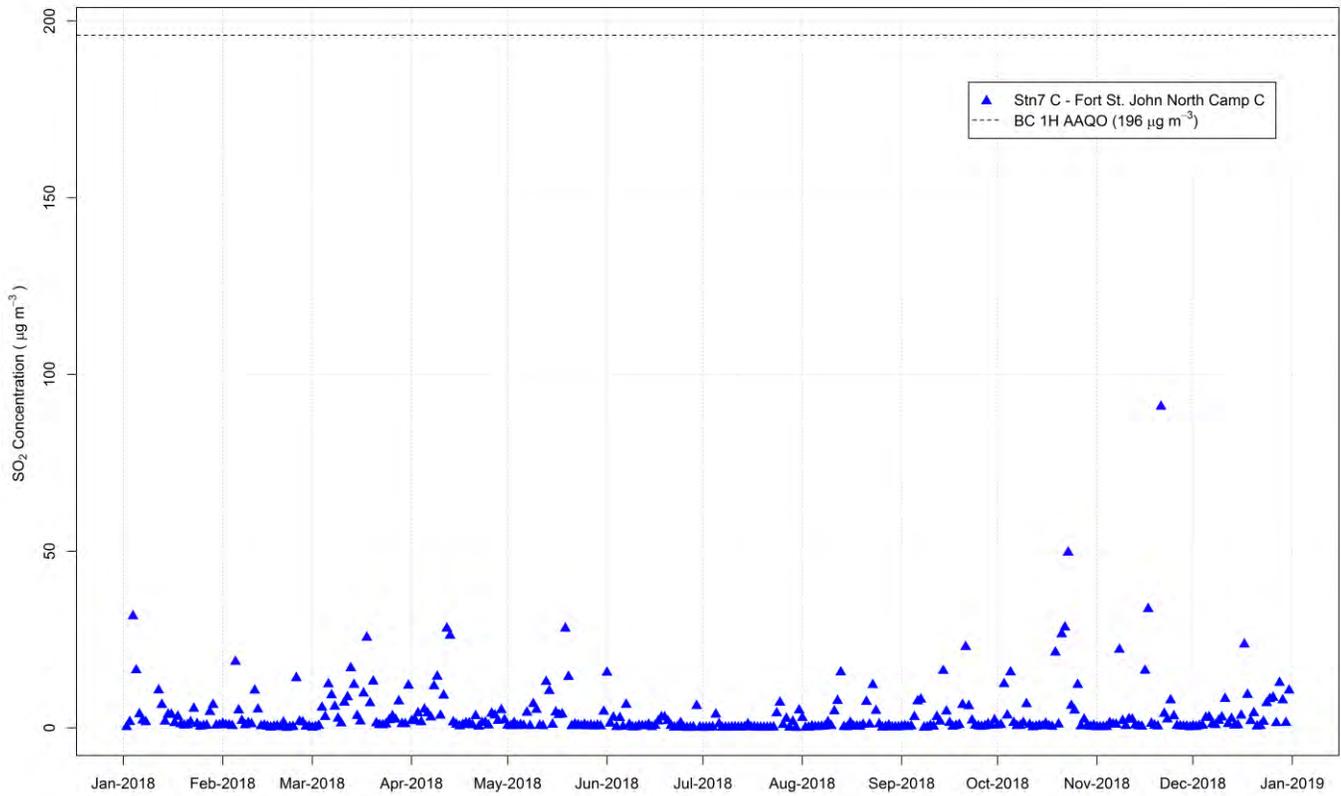
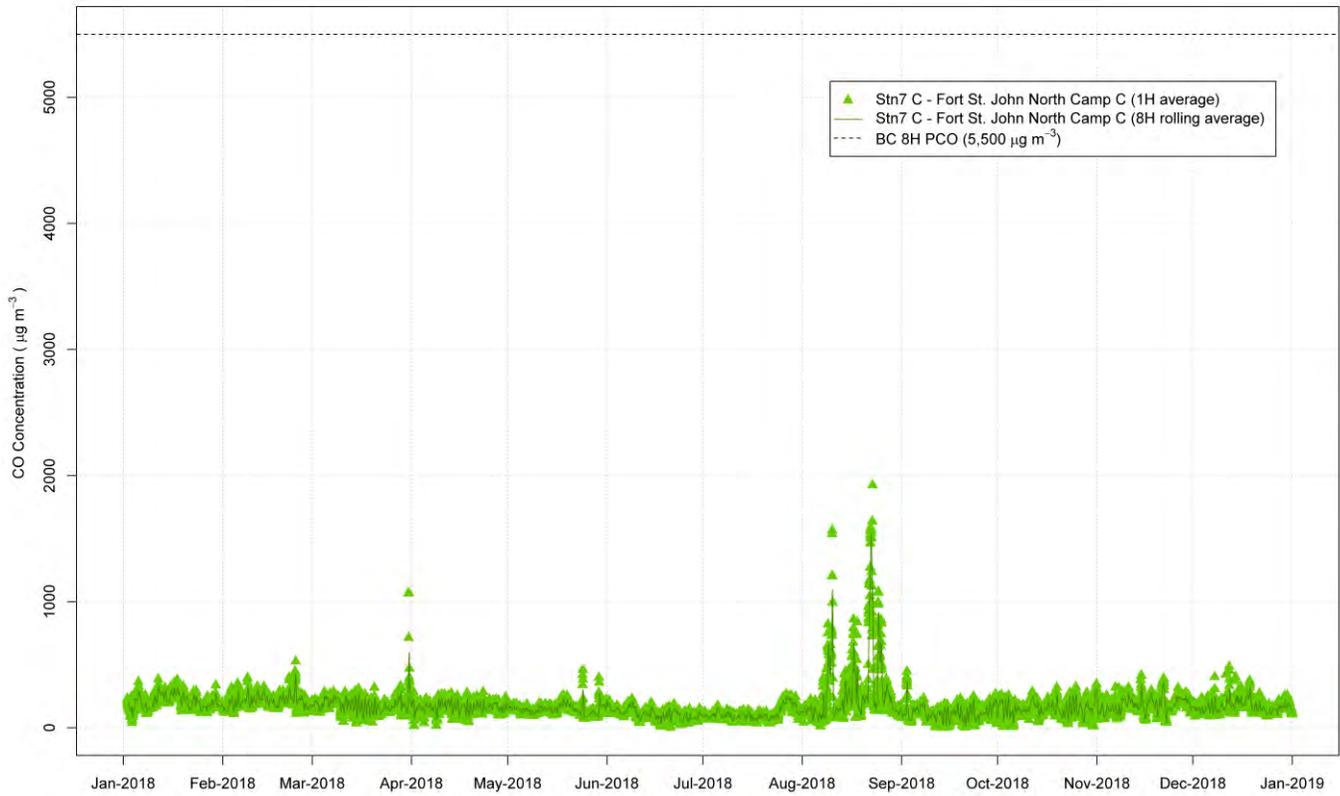


Figure 4-6: Daily 1-hour maximum NO<sub>2</sub> concentrations from Station 7C – Fort St. John North Camp C for 2018 (in µg/m<sup>3</sup>)



**Figure 4-7: Daily 1-hour maximum SO<sub>2</sub> concentrations from Station 7C – Fort St. John North Camp C for 2018 (in µg/m<sup>3</sup>)**



**Figure 4-8: 1-hour and 8-hour rolling average CO concentrations from Station 7C – Fort St. John North Camp C for 2018 (in  $\mu\text{g}/\text{m}^3$ )**



## 4.3 Air Quality Reporting

Section 12.3.3 of the FDS conditions requires that BC Hydro produce a plan that includes procedures to enable the appropriate authorities to alert sensitive receptor groups and Reservoir Area Indigenous Groups in case of any measured exceedances of the AAQO's and to address those exceedances. Following Section 5.0 of BC Hydro's Air Quality Monitoring Program, that forms part of the CEMP (BC Hydro 2016), BC Hydro has developed a Memorandum of Understanding (MOU) with the BC MECCS to allow access to all air quality readings monitored by BC Hydro. According to the MOU, the BC MECCS will be responsible for reporting the information publicly on the Ministry's near real-time air quality data portal<sup>1</sup>. This data portal is currently active and available to all interested parties to view current and historical air quality data from BC Hydro's air quality monitoring stations. Based on these measurements and other monitoring in the region, the BC MECCS and Northern Health are able to issue air quality advisories. Quality assured data are provided annually to the BC MECCS. Final validated data must be delivered four to eight weeks prior to the subsequent Provincial Clean Air Day as indicated in the MOU. As of January 2018, as noted in the MOU, measurements from the Site C monitoring network are also being shared regularly (monthly) with the Pacific Climate Impacts Consortium (PCIC).<sup>2</sup> PCIC is a regional climate service centre at the University of Victoria that provides practical information on the physical impacts of climate variability and change in the Pacific and Yukon Region of Canada.

### 4.3.1 Monitoring Station Audits

The BC MECCS conducted audits of the four ambient monitoring stations on March 03, June 06, and November 06, 2018, in accordance with the MOU. The results of these audits are presented in Table 4-5.

**Table 4-5: Summary of BC MECCS audit results for 2018**

Station	Measured Parameter	Audit Dates		
		March 03, 2018	June 06, 2018	November 06, 2018
Station 1	SHARP PM <sub>2.5</sub>	-	Pass	Pass
	SHARP PM <sub>10</sub>	-	Pass	Pass
Station 7	SHARP PM <sub>2.5</sub>	-	Pass	Pass
	SHARP PM <sub>10</sub>	-	Pass	Pass
	NO <sub>x</sub>	Pass <sup>(1)</sup>	Pass	Pass
	SO <sub>2</sub>	-	Pass	Pass
Station 8	SHARP PM <sub>2.5</sub>	-	Pass	No Audit <sup>(2)</sup>
	SHARP PM <sub>10</sub>	-	Pass	No Audit <sup>(2)</sup>
Station 9	SHARP PM <sub>2.5</sub>	-	Pass	Pass
	SHARP PM <sub>10</sub>	-	Pass	Pass

**Notes:** (1): Based on results of audits conducted in 2017, Station 7 NO<sub>x</sub> was on quarterly audit schedule whereas the rest of the network was on semi-annual audit schedule, hence on March 03, 2018 only NO<sub>x</sub> was audited. Since, NO<sub>x</sub> passed the March 03, 2018 audit, it was transferred to a semi-annual audit schedule along with rest of the Site-C air quality monitoring network.  
(2): Station 8 audit for November 06, 2018 was postponed/canceled due to inaccessibility from landslide and related work.

<sup>1</sup> <https://envistaweb.env.gov.bc.ca/> Data is available by searching in the reporting tool under purpose = BC HYDRO

<sup>2</sup> <https://www.pacificclimate.org/>



## 5 CONCLUSIONS

In fulfillment of the conditions outlined by the Project's environmental assessment approvals, this document reports on the climate and air quality as observed by the Site C monitoring network and the Environment and Climate Change Canada weather station at Fort St. John Airport during the 2018 calendar year.

Very small differences in ambient air temperature or in relative humidity were observed between the stations. This was attributed to the short distances and small elevation differences between stations; however, wind speed and wind direction were found to vary between stations due to small-scale surface features and terrain elevations having a larger impact on the local air flow patterns.

Site C network stations recorded a warmer annual average temperature, less precipitation and lower wind speeds than the Fort St. John Airport. The Fort St. John Airport annual average temperature was warmer than the 30-year climate normals and it observed greater precipitation and higher wind speeds than the Site C network.

Overall, there is very little difference in soil temperature between the stations. The soil temperature at all stations was observed to exceed 0 °C in April. Station 6 (Farrell Creek) thawed the earliest on April 11, 2018 and Station 10 (Tea Creek) thawed the latest on April 26, 2018.

Eleven excursions above the AAQO of 25 µg/m<sup>3</sup> for PM<sub>2.5</sub> and seven exceedances of the AAQO for PM<sub>10</sub>, and both based on a 24-hour averaging period, were observed at Station 1 (Attachie Flat Upper Terrace) in 2018. Eight excursions above the AAQO for PM<sub>2.5</sub> and forty-four exceedances of the AAQO for PM<sub>10</sub> for the 24-hour averaging periods were observed at Station 7C (Fort St. John North Camp C). At Station 8 (Old Fort), two excursions above the 24-hour AAQO for PM<sub>2.5</sub> and eight exceedances above the 24-hour AAQO for PM<sub>10</sub> were observed. Fifteen excursions above the 24-hour AAQO for PM<sub>2.5</sub> and eleven exceedances for the 24-hour AAQO for PM<sub>10</sub> were observed at Station 9 (85<sup>th</sup> Avenue).

The year 2018 had an active wildfire season in the northern British Columbia with one major long duration smoke event that affected the study area from July 29 to August 27. Outside of this smoke event, many of the 24-hour PM<sub>10</sub> exceedances were observed only at Station 7C (Fort St. John North Camp C) and not at any of the other BC Hydro stations and have therefore been attributed to dam construction activities. An alerting system is in place to immediately notify BC Hydro and its contractors about any elevated concentrations or excursions taking place so they can work to identify the activities onsite that may be responsible for the emissions and implement mitigation measures or change activities to reduce those emissions. BC Hydro conducted environmental audits throughout 2018 to verify implementation of the EPPs, including implementation of appropriate mitigation measures in response to air quality alerts.

No excursions or exceedances of the 1-hour SO<sub>2</sub> and 1-hour NO<sub>2</sub> AAQOs were observed in 2018. There were also no observed exceedances of the 1-hour or 8-hour PCOs for CO in 2018. The annual average NO<sub>2</sub> and SO<sub>2</sub> concentrations were well below their respective annual AAQOs.



## 6 REFERENCES

- BC Hydro (2018). Smoke Management Plan (Rev. 2). 52 pp.
- BC Hydro (2016). Construction Environmental Management Plan. 72 pp.
- B.C. Ministry of Environment & Climate Change Strategy. 2018. British Columbia Ambient Air Quality Objectives. May 9, 2018.
- BC Ministry of Forests, Lands and Natural Resource Operations (2017), Wildfire Management Branch. Wildfire season summary. Retrieved 2017-02-08, from <http://www2.gov.bc.ca/gov/content/safety/wildfire-status/wildfire-statistics/wildfire-season-summary>
- Canadian Environmental Assessment Agency (2014). Decision Statement Issued under Section 54 of the Canadian Environmental Assessment Act, 2012.
- Environmental Assessment Office (2014). Environmental Assessment Certificate # E14-02 Issued under the ENVIRONMENTAL ASSESSMENT ACT. S.B.C. 2002, c. 43.
- Environment and Climate Change Canada. (2016). Canadian Climate Normals or Averages 1981-2010. Retrieved 02 2017, from: [http://climate.weather.gc.ca/climate\\_normals/results\\_1981\\_2010\\_e.html?searchType=stnName&txtStationName=fort+st+john&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=1413&dispBack=1](http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnName&txtStationName=fort+st+john&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=1413&dispBack=1)
- RWDI Air Inc. (2012). Site C Clean Energy Project Volume 2 Appendix K Technical Data Report: Microclimate. Prepared for BC Hydro Power and Authority. Vancouver, BC.
- RWDI Air Inc. (2015a). Site C Climate and Air Quality Monitoring Annual Report 2012. Prepared for BC Hydro Power and Authority. Vancouver, BC.
- RWDI Air Inc. (2015b). Site C Climate and Air Quality Monitoring Annual Report 2013. Prepared for BC Hydro Power and Authority. Vancouver, BC.
- RWDI Air Inc. (2015c). Site C Climate and Air Quality Monitoring Annual Report 2014. Prepared for BC Hydro Power and Authority. Vancouver, BC.
- RWDI Air Inc. (2016). Site C Climate and Air Quality Monitoring Annual Report 2015. Prepared for BC Hydro Power and Authority. Vancouver, BC.
- RWDI Air Inc. (2017). Site C Climate and Air Quality Monitoring Annual Report 2016. Prepared for BC Hydro Power and Authority. Vancouver, BC.
- RWDI Air Inc. (2018). Site C Climate and Air Quality Monitoring Annual Report 2017. Prepared for BC Hydro Power and Authority. Vancouver, BC.

## APPENDIX A

A large decorative graphic on the page. It features a blue triangular shape in the top-left corner, a white curved line separating it from a large, light beige circular area that dominates the right and bottom portions of the page. The text '2018 COMPLIANCE SUMMARY' is centered within this beige area.

## 2018 COMPLIANCE SUMMARY



Table A- 1: Summary of AQMP Conditions and Year 2018 Compliance Summary

Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
EAC Condition 57	The EAC Holder must develop an Air Quality Management Plan and Smoke Management Plan	Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendices A (Smoke Management Plan and B (Air Quality Monitoring Plan)	Completed February 4, 2016	Construction Environmental Monitoring Plan
	The Air Quality Management Plan and Smoke Management Plan must include at least the following to describe how the EAC Holder:			
	<ul style="list-style-type: none"> <li>Identify places of high use by Indigenous Groups for traditional purposes and develop mitigation measures if adverse effects are predicted at those locations.</li> </ul>	Ground truthing activities are conducted per the Aboriginal Plant Use Mitigation Plan, Cultural Resources Mitigation Plan, and Heritage Resources Management Plan.	<ul style="list-style-type: none"> <li>BC Hydro has initiated ground truthing programs with the purpose of engaging with Indigenous land users, including registered trapline holders, to verify and accurately locate Indigenous land use information, and to identify concerns related to specific features, or sites that may be affected by the Project. BC Hydro has provided funding to Indigenous groups for ground truthing through Consultation and Capacity Funding Agreements. During this reporting period, ground truthing was undertaken by Blueberry River First Nations, Doig</li> </ul>	<p>To date, ground truthing has identified areas of Indigenous use along the transmission line right-of-way, Cache Creek / Bear Flats, and Halfway River / Attachie Flats.</p> <p>Confidential ground truthing reports that summarize the ground truthing activities identify times when these areas may be used.</p> <p>Setback distances and ignition criteria described in the Smoke Management Plan (Sections 4.4 and 5.0, respectively) would apply in these areas.</p> <p>Indigenous groups will be notified of planned debris burning through the activities and tools described in section 5.0 of the Aboriginal Group Communications Plan (Appendix D of the CEMP).</p> <p>BC Hydro continues to consult with Indigenous groups regarding construction plans, and has sent invitation letters in April 2017, September 2017, January 2018, June 2018 and</p>



Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
			River First Nation, Halfway River First Nation, McLeod Lake Indian Band, and Saulneau First Nation.	August 2018 highlighting areas where construction is planned in order that Indigenous groups could ground truth areas of traditional significance prior to construction.
	<ul style="list-style-type: none"> <li>Measures to manage emissions and dust from all Project activities.</li> </ul>	Construction Environmental Management Plan Section 4.1	Completed  February 4, 2016, and ongoing	Section 4.1 provides mitigation measures to be completed to manage emissions and dust.
	<ul style="list-style-type: none"> <li>Measures to manage Project effects on air quality associated with concrete production at concrete batch plants.</li> </ul>	Construction Environmental Management Plan Section 4.1	Completed  February 4, 2016, and ongoing	Section 4.1 provides mitigation measures to be taken to manage air quality effects associated with concrete batch plant operations
	<ul style="list-style-type: none"> <li>Control Project-related smoke by following the most current BC Ministry of Environment Open Burning Smoke Control Regulation.</li> </ul>	Construction Environmental Management Plan Appendix A	Ongoing	Section 4.1 and Appendix A of the CEMP refer to the requirement to control Project-related smoke in accordance with the BC Ministry of Environment's Open Burning Smoke Control Regulation. BC Hydro audits compliance with this requirement by reviewing contractor EPPs and conducting environmental audits during construction to verify implementation of EPPs.
	<ul style="list-style-type: none"> <li>Measures to retain vegetative barriers, or install temporary barriers, where practical.</li> </ul>	Construction Environmental Management Plan Section 4.1	Ongoing	Section 4.1 identifies this commitment.
	<ul style="list-style-type: none"> <li>Procedures to provide MOE with data collected during monitoring so that they can notify sensitive populations if air quality thresholds are exceeded.</li> </ul>	Construction Environmental Management Plan Appendix B Section 5.0	Ongoing	BC Hydro has entered into an agreement with the BC MOE to make all air quality measurements available in near real-time. All operational air quality stations are accessed hourly by the BC MOE.
	The EAC Holder must monitor air quality associated with shoreline protection works at Hudson's Hope during the construction period and for the first two years of operations.	Construction Environmental Management Plan Appendix B Section 4.0	Future requirement	Shoreline protection works at Hudson's Hope are planned to commence in 2020- 2022, and air quality monitoring plans will be implemented during construction and for the first 2 years of reservoir operations.



Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
	The EAC Holder must provide these draft Air Quality Management Plan and Smoke Management Plan to MOE, City of Fort St. John, District of Hudson's Hope, Peace River Regional District, District of Taylor, District of Hudson's Hope, District of Chetwynd and Indigenous Groups for review a minimum of 90 days prior to the commencement of construction activities.	Draft Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendix A (Smoke Management Plan) and Appendix B (Air Quality Monitoring Program)	Completed	The draft CEMP was submitted for review and comment on October 17, 2014.
	The EAC Holder must file the final Air Quality Management Plan and Smoke Management Plan with EAO, MOE, City of Fort St. John, District of Hudson's Hope, Peace River Regional District, District of Taylor, District of Chetwynd and Indigenous Groups a minimum of 30 days prior to the commencement of construction activities.	Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendix A (Smoke Management Plan) and Appendix B (Air Quality Monitoring Program)	Completed	The final (Revision 1) of the CEMP was provided to regulatory agencies, governments and Indigenous Groups on June 5, 2015. The CEMP continues to be updated as required, with the most recent version, Revision 4, dated July 26, 2016, was accessible to regulators, government agencies, Indigenous Groups and the public via the Site C Clean Energy Project website at: <a href="https://www.sitecproject.com/document-library/environmental-management">https://www.sitecproject.com/document-library/environmental-management</a> .



Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
	The EAC Holder must develop, implement and adhere to the final Air Quality Management Plan and Smoke Management Plan, and any amendments, to the satisfaction of EAO.	Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendices A (Smoke Management Plan and B (Air Quality Monitoring Plan)	Ongoing	<p>2018 Air Quality Management Plan Annual Report</p> <p>BC Hydro audits contractor compliance with implementation of relevant requirements of the Air Quality Management Plan through:</p> <ul style="list-style-type: none"> <li>• reviewing Environmental Protection Plans (EPPs) submitted by the contractors and,</li> <li>• conducting environmental audits during construction to verify that requirements of the Plan are being considered and implemented as required</li> </ul> <p>BC Hydro will continue to issue Field Advice Memos to its contractors to address any issues of non-compliance.</p>
EAC Condition 59	The EAC Holder must outline measures including relocation of affected home-owners, as deemed appropriate in consultation with affected home-owners, to address serious levels of noise or changes in air quality during construction of the Project. The measures would be included in the appropriate plans.	Construction Environmental Management Plan Section 4.11 (Noise and Vibration Management) and Appendix B (Air Quality Monitoring Plan)	Consultation with affected homeowners or Northern Health/BC Ministry of Environment to occur if necessary	A noise and air quality complaint response process has been developed and is being implemented. Key steps in the process include proactive noise mitigation, complaint response, monitoring/notification as required, and additional mitigation if warranted.



Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
FDS Condition 12.1	The Proponent shall ensure that Designated Project construction is undertaken in a manner that protects the health of Indigenous peoples, by ensuring that exceedances of federal and provincial ambient air quality objectives are avoided or minimized and by managing the potential effects of smoke and dustfall.		Ongoing	<p>Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendices A (Smoke Management Plan and B (Air Quality Monitoring Plan)</p> <p>BC Hydro audits contractor compliance with implementation of relevant requirements of the Air Quality Management Plan through:</p> <ul style="list-style-type: none"> <li>• reviewing Environmental Protection Plans (EPPs) submitted by the contractors and,</li> <li>• conducting environmental audits during construction to verify that requirements of the Plan are being considered and implemented as required</li> </ul> <p>BC Hydro will continue to issue Field Advice Memos to its contractors to address any issues of non-compliance.</p>
FDS Condition 12.2	The Proponent shall develop, in consultation with Reservoir Area Indigenous groups, an air quality management plan to ensure exceedances of those ambient air quality objectives due to Designated Project construction are avoided or minimized at human receptor sites located outside the Project Activity Zone.	Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendices A (Smoke Management Plan and B (Air Quality Monitoring Plan)	Completed February 4, 2016	Construction Environmental Management Plan
FDS Condition 12.3	The plan shall include:			

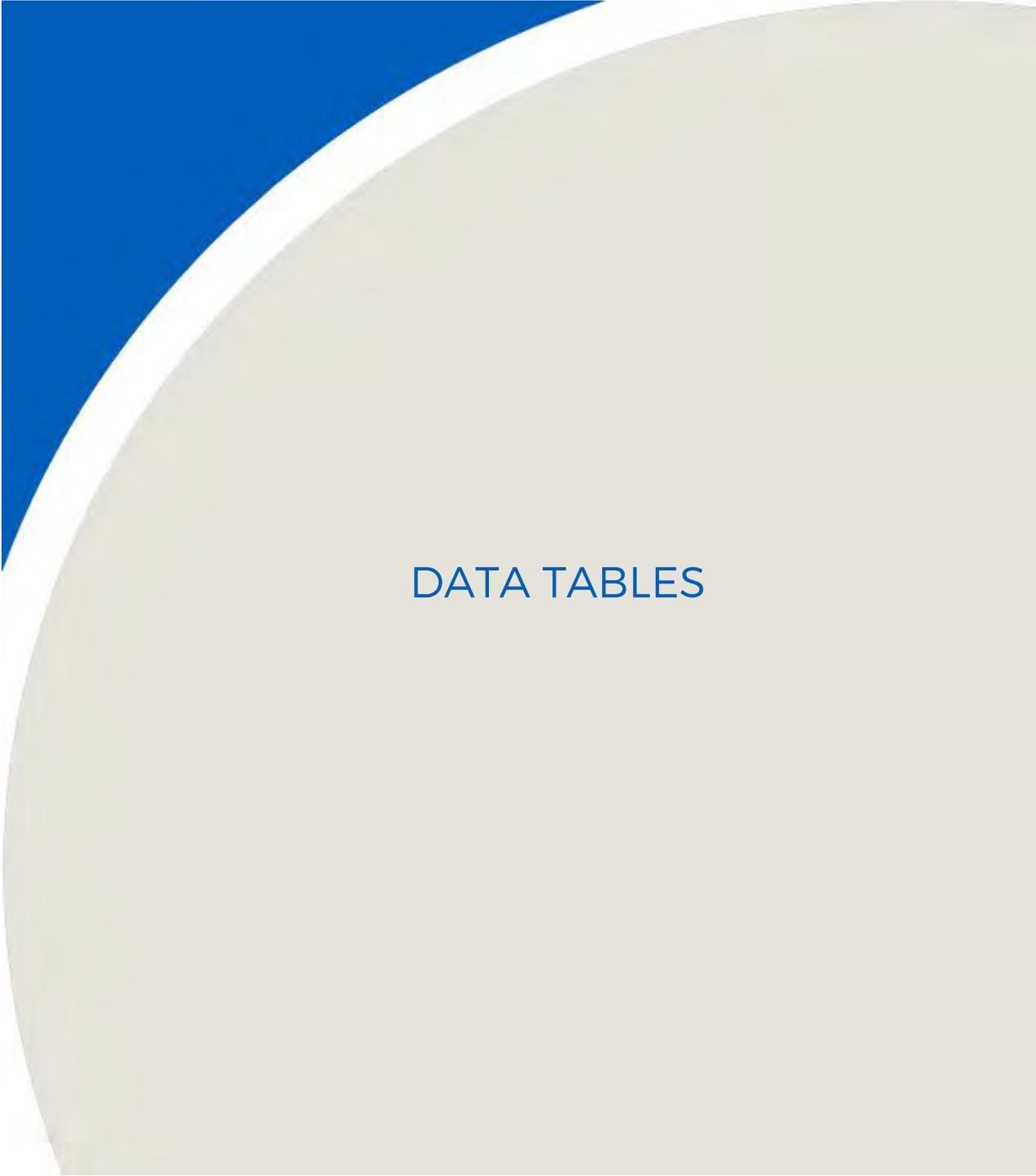


Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
FDS Condition 12.3.1	<ul style="list-style-type: none"> <li>measures to avoid or minimize exceedances of federal and provincial ambient air quality objectives for Total Suspended Particulates (TSP), Particulate Matter (PM<sub>2.5</sub>, PM<sub>10</sub>), Carbon Monoxide (CO), Nitrogen Dioxide (NO<sub>2</sub>) and Sulphur Dioxide (SO<sub>2</sub>);</li> </ul>	Construction Environmental Management Plan Section 4.1	Completed February 4, 2016	Construction Environmental Management Plan
FDS Condition 12.3.2	<ul style="list-style-type: none"> <li>measures to minimize or manage the potential effects of smoke and dustfall;</li> </ul>	Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendices A (Smoke Management Plan)	Completed February 4, 2016	Construction Environmental Management Plan
FDS Condition 12.3.3	<ul style="list-style-type: none"> <li>procedures to enable the appropriate authorities to alert sensitive receptor groups and Reservoir Area Indigenous groups in cases of exceedance of air quality standards and to address those exceedances; and</li> </ul>	Construction Environmental Management Plan Appendix B Section 5.0	Ongoing	BC Hydro has entered into an agreement with the BC MOE to make all air quality data available in near real-time. All operational air quality stations are accessed hourly by the BC MOE.
FDS Condition 12.3.4	<ul style="list-style-type: none"> <li>procedures to monitor air quality effects at locations used by Indigenous groups and to develop mitigation measures if adverse effects are predicted at those locations.</li> </ul>	Construction Environmental Management Plan Appendix B	Completed July 8, 2016	Air quality monitors measuring PM <sub>10</sub> and PM <sub>2.5</sub> were installed at three locations before construction began. A fourth station at the construction site measuring PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> and CO was installed July 7, 2016.
FDS Condition 12.4	The Proponent shall submit to the Agency and Reservoir Area Indigenous groups a draft copy of the plan for review 90 days prior to initiating construction.	Construction Environmental Management Plan Section 4.1 (Air Quality Management Plan) and Appendix A (Smoke Management Plan)	Completed	The draft CEMP was submitted for review and comment on October 17, 2014.
FDS Condition 12.5	The Proponent shall submit to the Agency the final plan a minimum of 30 days prior to initiating construction.	Construction Environmental Management Plan Section 4.1 (Air Quality	Completed	The final Construction Environmental Management Plan, along with the Consideration



Condition	Condition Description	Plan Reference	Status	Evidence/Deliverables
	When submitting the final plan, the Proponent shall provide to the Agency an analysis that demonstrates how it has appropriately considered the input, views or information received from Reservoir Area Indigenous groups.	Management Plan) and Appendices A (Smoke Management Plan)		Tracking Table was submitted on June 5, 2015.
FDS Condition 12.6	The Proponent shall implement the plan and provide to the Agency an analysis and summary of the implementation of the plan, as well as any amendments made to the plan in response to the results, on an annual basis during construction and the first year of operation.	Air Quality Management Plan 2015	4th Annual Report to CEAA included in this document.	Air Quality Management Plan 2015. <ul style="list-style-type: none"> <li>1<sup>st</sup> Annual Report to CEAA submitted July 2016.</li> <li>Second Annual Report submitted March 21, 2017 and revised June 14, 2017.</li> <li>Third Annual Report was submitted March 29, 2018</li> <li>4th Annual Report included in this document.</li> </ul>
FDS Condition 12.7	The Proponent shall provide a copy of the same version of its annual reporting on ambient air quality as provided to the Agency and in the same timeframe to Reservoir Area Indigenous groups and the Métis Nation British Columbia.	Air Quality Management Plan 2015	4th Annual Report to CEAA included in this document.	Air Quality Management Plan 2015. <ul style="list-style-type: none"> <li>1<sup>st</sup> Annual Report to CEAA submitted July 2016.</li> <li>Second Annual Report submitted March 21, 2017 and revised June 14, 2017.</li> <li>Third Annual Report submitted March 29, 2018</li> <li>4th Annual Report included in this document.</li> </ul>

## APPENDIX B

A large decorative graphic on the page. It features a blue triangular shape in the top-left corner, a white curved line separating it from a large, light beige circular area that dominates the right and bottom portions of the page. The text 'DATA TABLES' is centered within this beige area.

DATA TABLES



**Table B- 1: Monthly average temperatures at all Site C network stations and Fort St. John Airport for the year 2018 as well as the 30-year climate normals from 1981 to 2010.**

Month	Station 1	Station 3	Station 4	Station 6	Station 7B	Station 10	Station 11	FSJ Airport	Climate Normals
Jan	-12.4	-11.8	-12.3	-11.2	-11.4	-11.9	-12.3	-12.3	-12.8
Feb	-13.1	-12.9	-13.1	-11.7	-12.1	-12.9	-13.1	-13.3	-9.6
Mar	-6.1	-6.3	-5.6	-5.2	-5.8	-7.0	-6.2	-7.3	-4.6
Apr	1.2	1.3	2.0	1.9	2.1	0.9	1.5	0.2	3.9
May	14.6	14.6	14.7	14.2	15.5	14.2	14.5	14.0	9.8
Jun	14.7	14.5	14.7	15.0	15.4	14.0	15.0	14.0	14.1
Jul	16.8	16.4	16.8	17.0	17.8	16.4	17.1	16.2	16.2
Aug	15.4	15.5	15.5	15.7	17.0	15.5	15.5	15.6	14.9
Sep	5.5	5.0	-	5.8	6.0	5.0	5.9	4.7	10.1
Oct	3.0	3.8	-	3.6	4.3	3.7	3.4	3.2	3.6
Nov	-3.5	-3.0	-	-2.1	-3.5	-3.6	-4.5	-4.1	-6.6
Dec	-8.5	-7.9	-8.2	-7.1	-8.1	-8.1	-8.5	-8.4	-11.4
<b>Annual average</b>	2.4	2.5	2.9	3.1	3.2	2.3	2.5	2.0	2.3

**Notes:** A "-" indicates a period for which the data was not sufficiently complete to calculate a valid monthly or annual average.



**Table B-2: Monthly average relative humidity measured at 15:00 LST at all Site C network stations and Fort St. John Airport for the year 2018 as well as the 30-year climate normals from 1981 to 2010.**

Month	Station 1	Station 3	Station 4	Station 6	Station 7B	Station 10	Station 11	FSJ airport	Climate normals
Jan	75.3	73.3	72.8	73.1	74.1	76.6	74.8	76.8	68.5
Feb	63.5	57.7	59.2	57.2	63.0	64.4	60.4	63.9	62.9
Mar	60.9	56.5	54.6	51.0	59.6	63.3	55.7	62.6	53.8
Apr	42.8	41.2	37.2	36.7	41.8	44.4	37.9	47.7	42.6
May	26.2	27.4	24.7	26.8	26.1	28.8	28.0	29.6	41.1
Jun	43.7	45.0	42.6	40.8	43.6	46.8	46.7	50.8	45.7
Jul	51.9	55.3	51.0	47.7	48.5	52.4	53.4	53.8	49.3
Aug	44.0	47.6	43.8	42.8	42.8	47.0	48.6	47.9	50.6
Sep	56.6	56.6	-	54.2	57.4	59.0	57.6	58.1	52.4
Oct	52.6	54.6	-	52.4	50.6	51.3	49.8	51.8	57.9
Nov	80.9	79.5	-	77.0	79.4	80.4	83.1	82.0	72.3
Dec	80.9	81.0	80.2	74.3	79.5	76.6	77.9	77.7	71.5
<b>Annual average</b>	56.6	56.2	52.1	52.9	55.5	57.5	56.1	58.5	55.7

**Notes:** A "-" indicates a period for which the data was not sufficiently complete to calculate a valid monthly or annual average.



**Table B-3: Monthly precipitation totals at all Site C stations and Fort St. John Airport for the year 2018 as well as the 30-year climate normals from 1981 to 2010.**

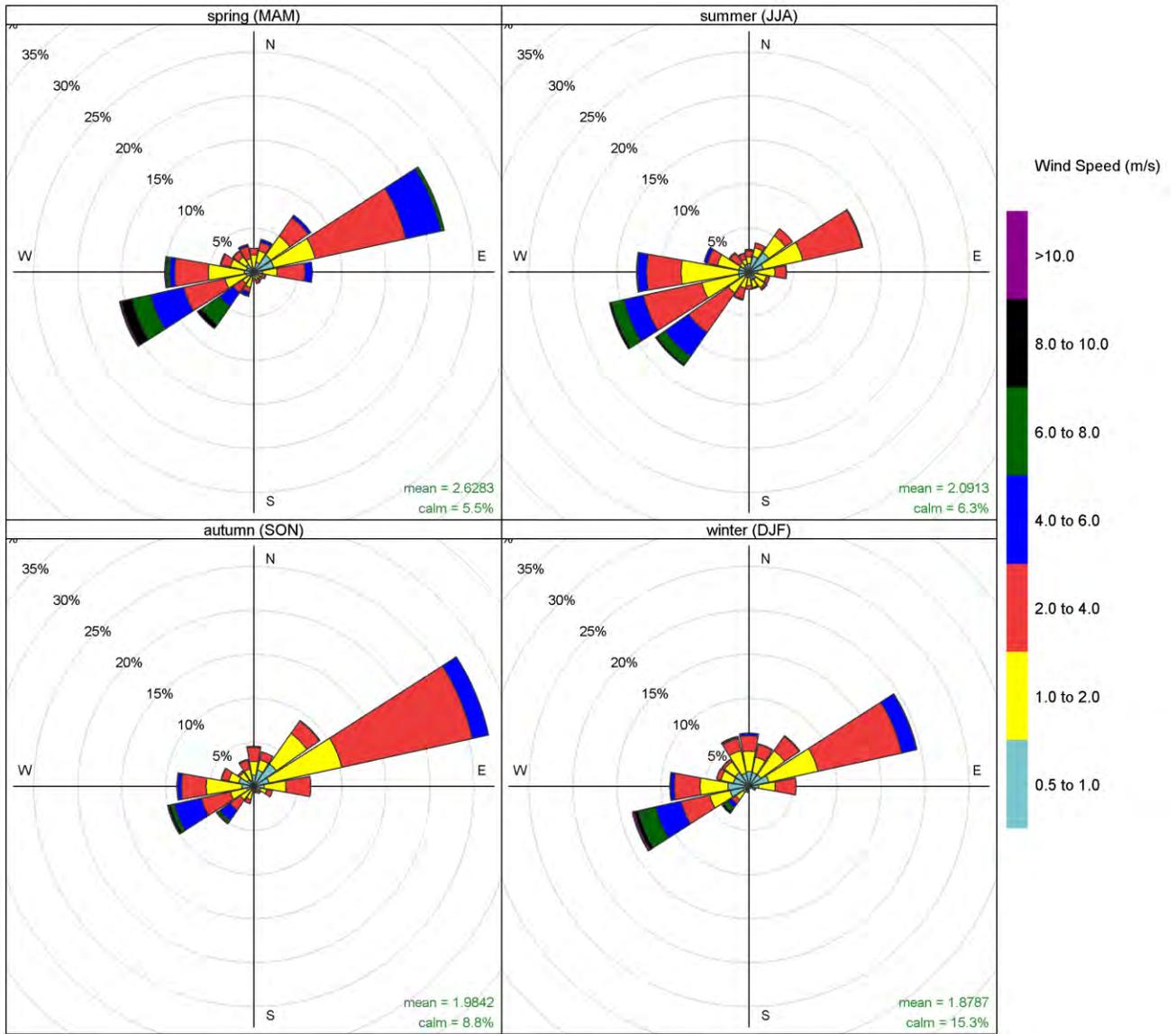
Month	Station 1	Station 3	Station 4	Station 6	Station 7B	Station 10	Station 11	FSJ Airport	Climate normals
Jan	23.9	22.5	-	-	15.1	-	18.1	41.6	25.4
Feb	16.4	16.5	-	25.9	14.2	-	-	37.8	19.0
Mar	35.2	25.7	33.4	44.8	36.1	39.0	-	93.3	23.7
Apr	14.3	13.2	23.8	12.6	12.9	12.6	-	21.1	20.0
May	9.0	8.9	6.9	8.5	3.6	4.5	-	6.1	37.9
Jun	111	125	120	102	102	108	-	93.9	65.6
Jul	107	105	83.0	109	93.2	86.0	-	96.9	75.2
Aug	17.8	20.4	18.5	19.4	17.1	26.1	-	19.4	51.2
Sep	66.1	66.6	60.5	65.6	64.2	66.0	-	60.7	44.7
Oct	28.8	28.6	22.3	34.0	30.0	24.8	-	20.7	30.8
Nov	32.8	30.5	-	33.8	42.8	38.5	43.9	53.5	29.2
Dec	45.0	41.7	-	60.5	30.2	-	30.4	55.9	22.0
<b>Total<sup>(1)</sup></b>	508	505	368	516	461	405	92.4	601	445

**Notes:** A "-" indicates a period for which the data was not sufficiently complete to calculate a valid monthly or annual total.

## APPENDIX C

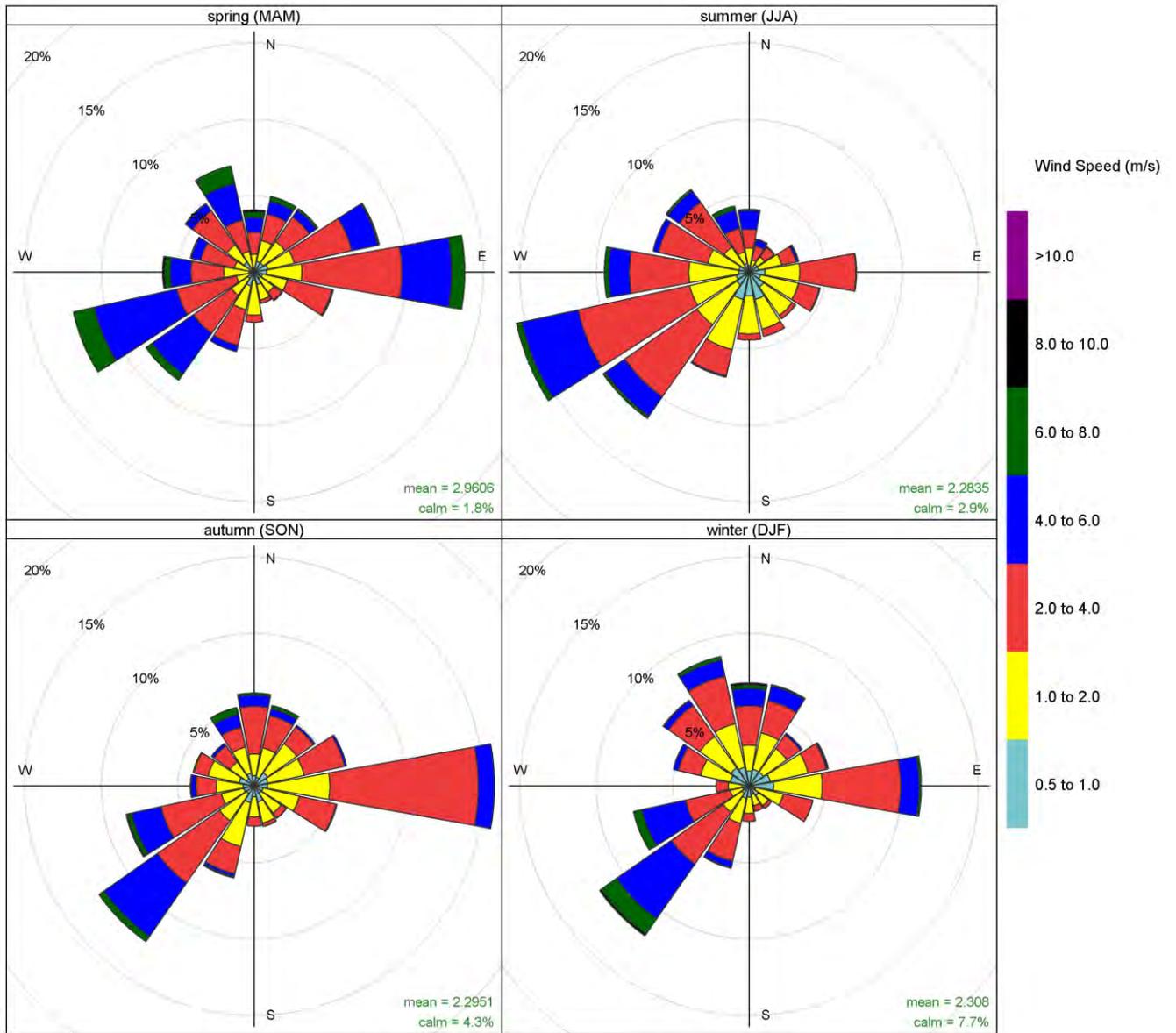
A large decorative graphic on the right side of the page. It features a blue triangular shape in the top-left corner, a white curved line separating it from a large, light beige circular area that dominates the right half of the page. The text 'SEASONAL WIND ROSES' is centered within this beige area.

## SEASONAL WIND ROSES



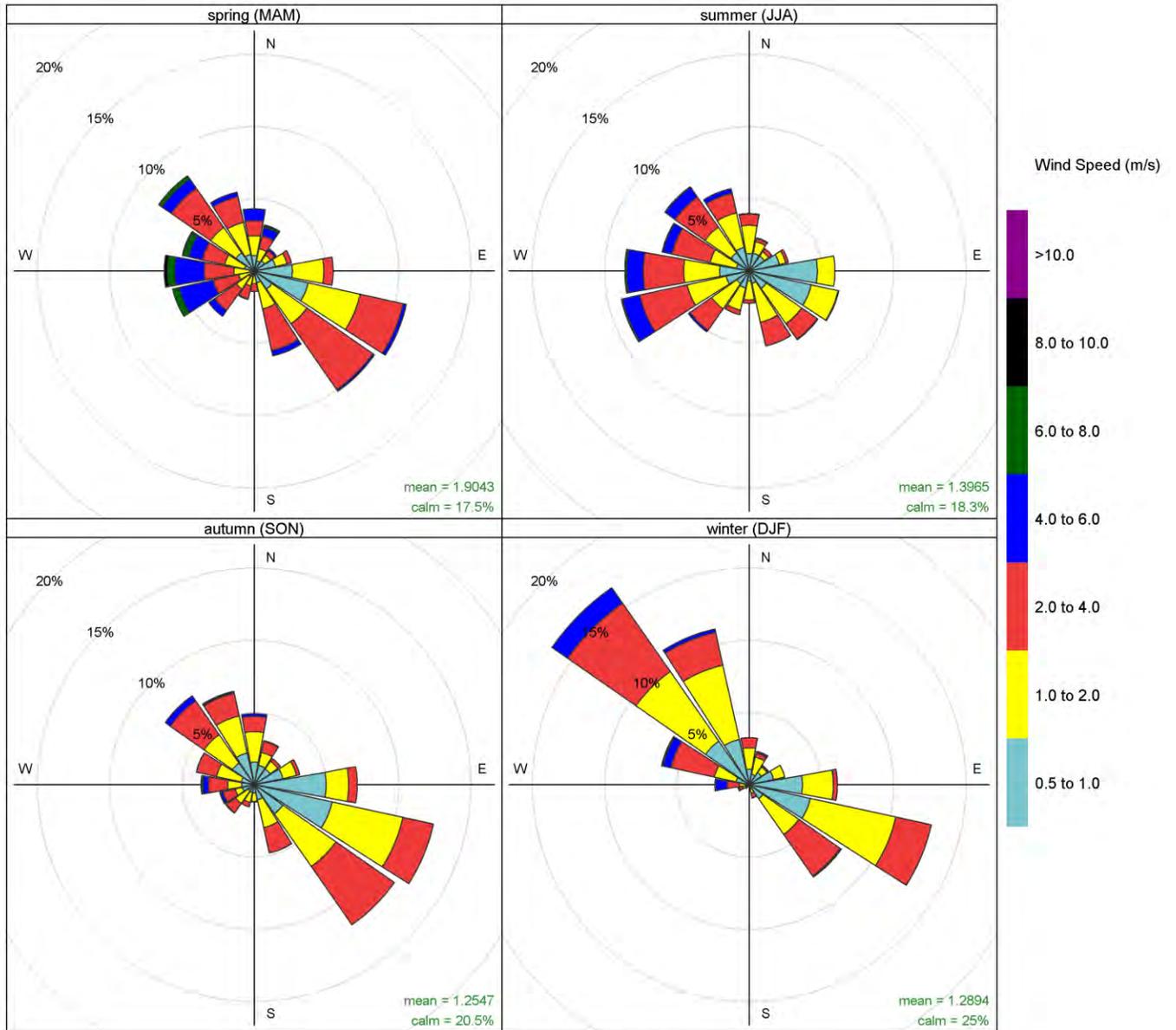
Frequency of counts by wind direction (%)

Figure C-1: Wind Roses by season for Station 1 (Attachie Flat Upper Terrace) for 2018.



Frequency of counts by wind direction (%)

Figure C-2: Wind Roses by season for Station 3 (Attachie Plateau) for 2018.



Frequency of counts by wind direction (%)

Figure C-3: Wind Roses by season for Station 4 (Bear Flat) for 2018.

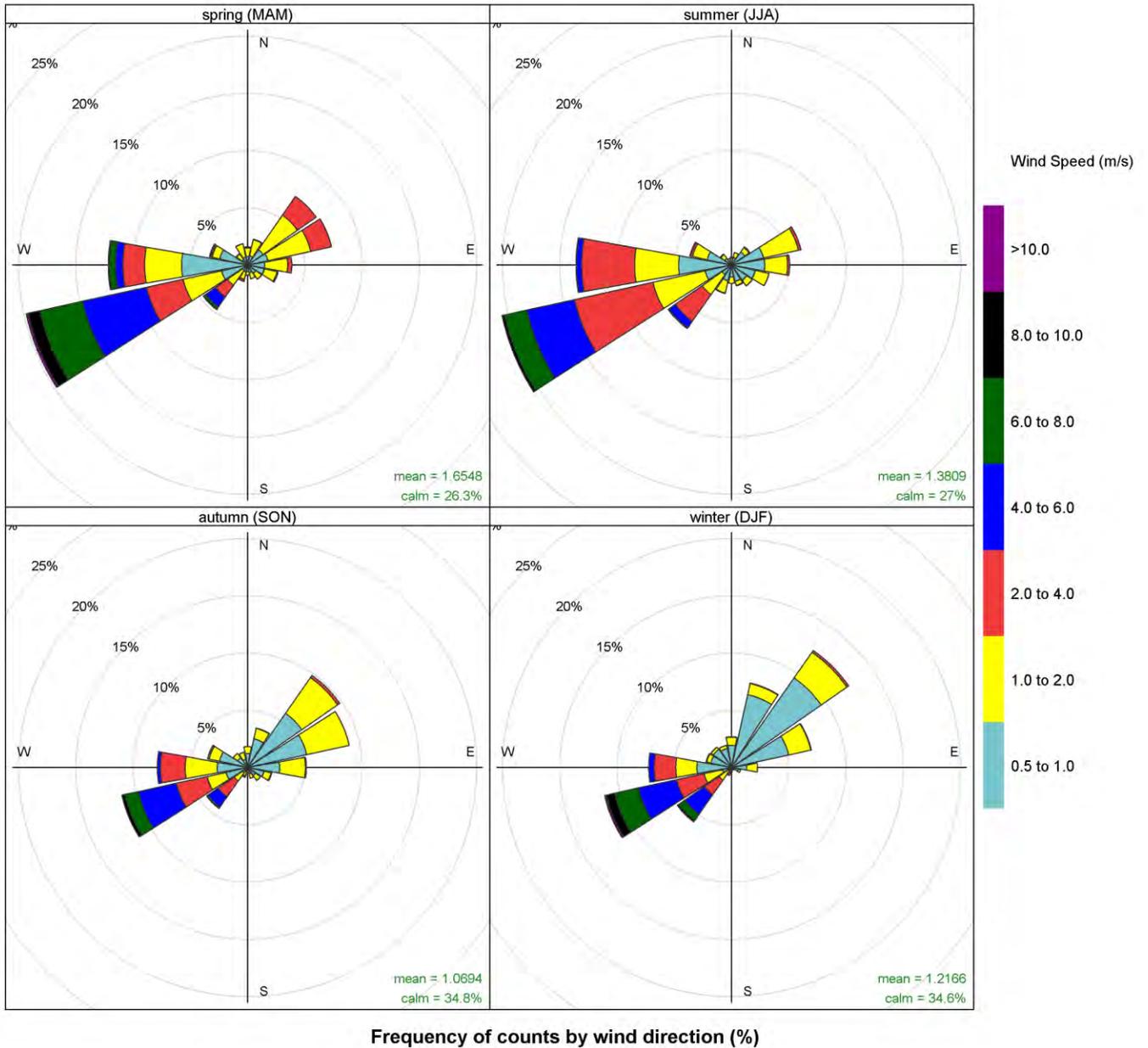


Figure C-4: Wind Roses by season for Station 6 (Farrell Creek) for 2018.

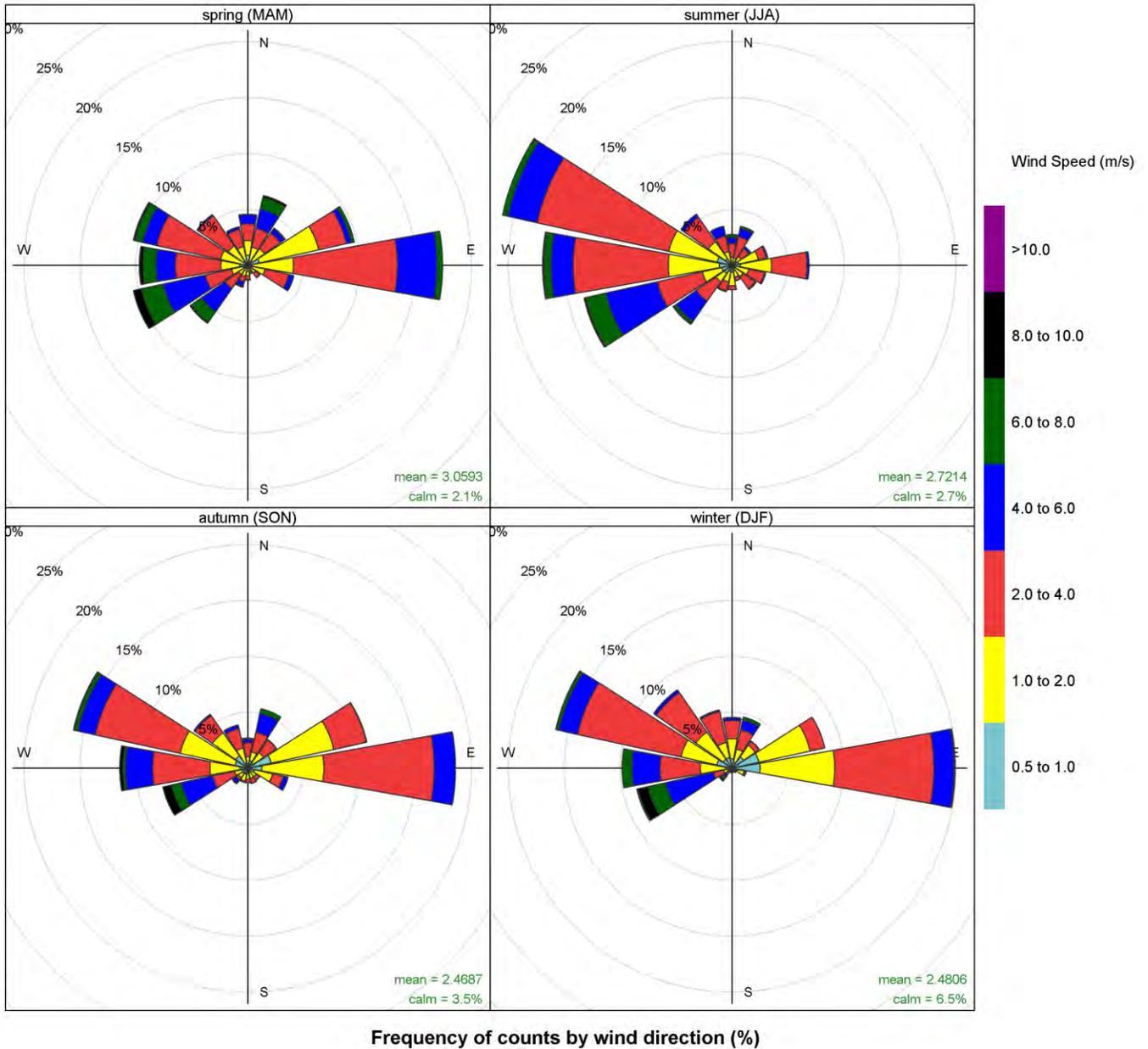
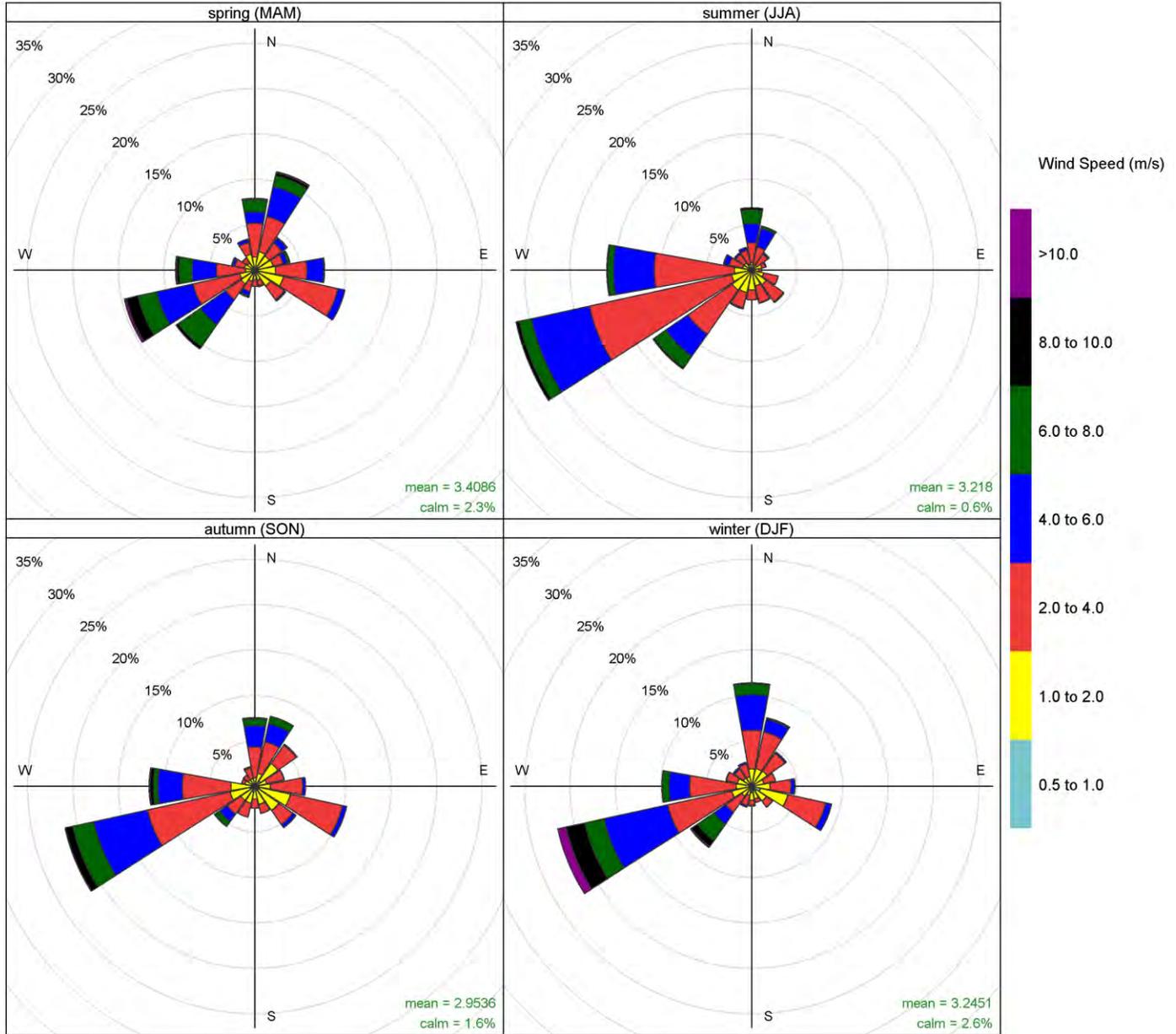
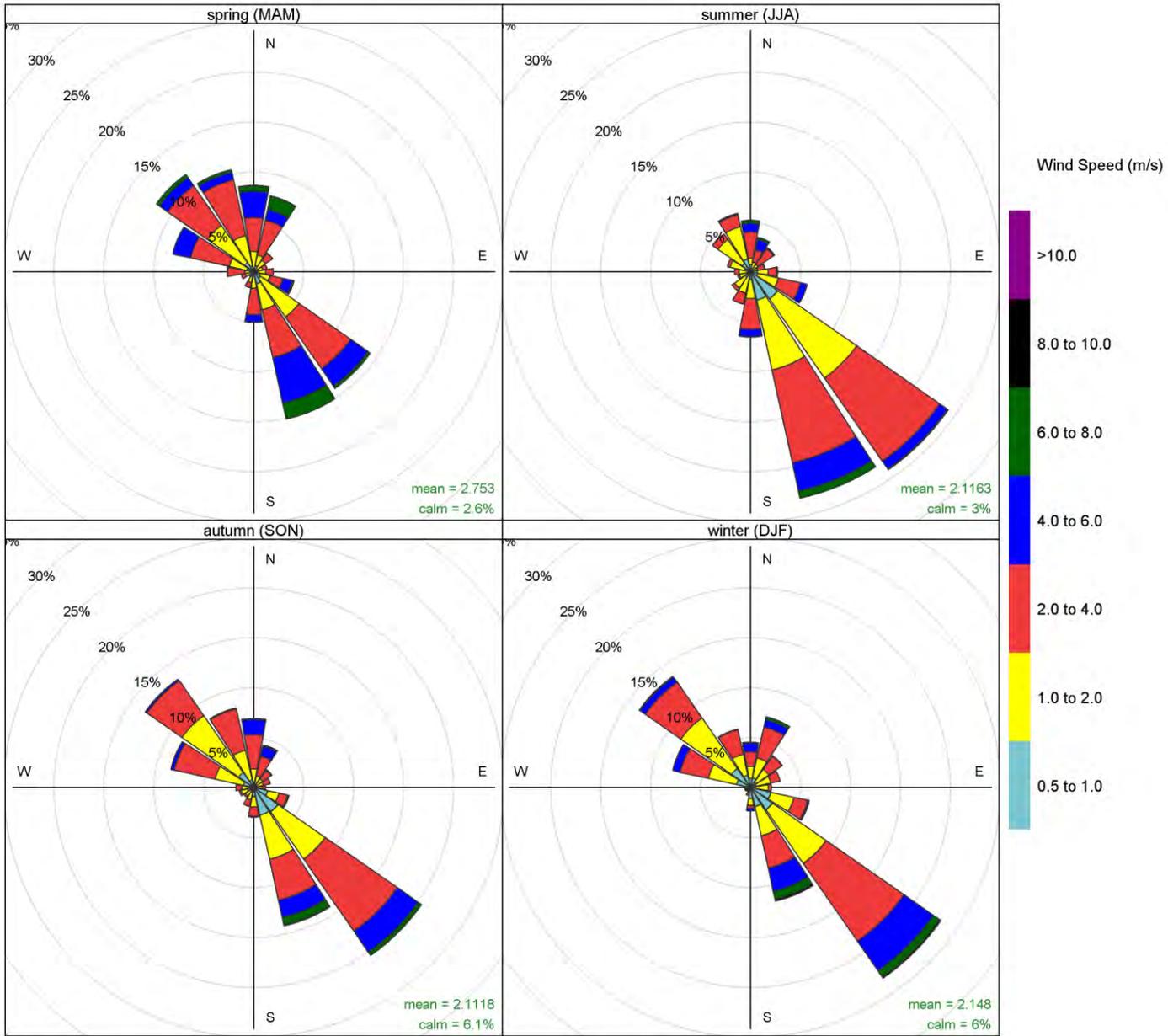


Figure C-5: Wind Roses by season for Station 7B/C (Site C North Camp/Fort St. John North Camp C) for 2018.



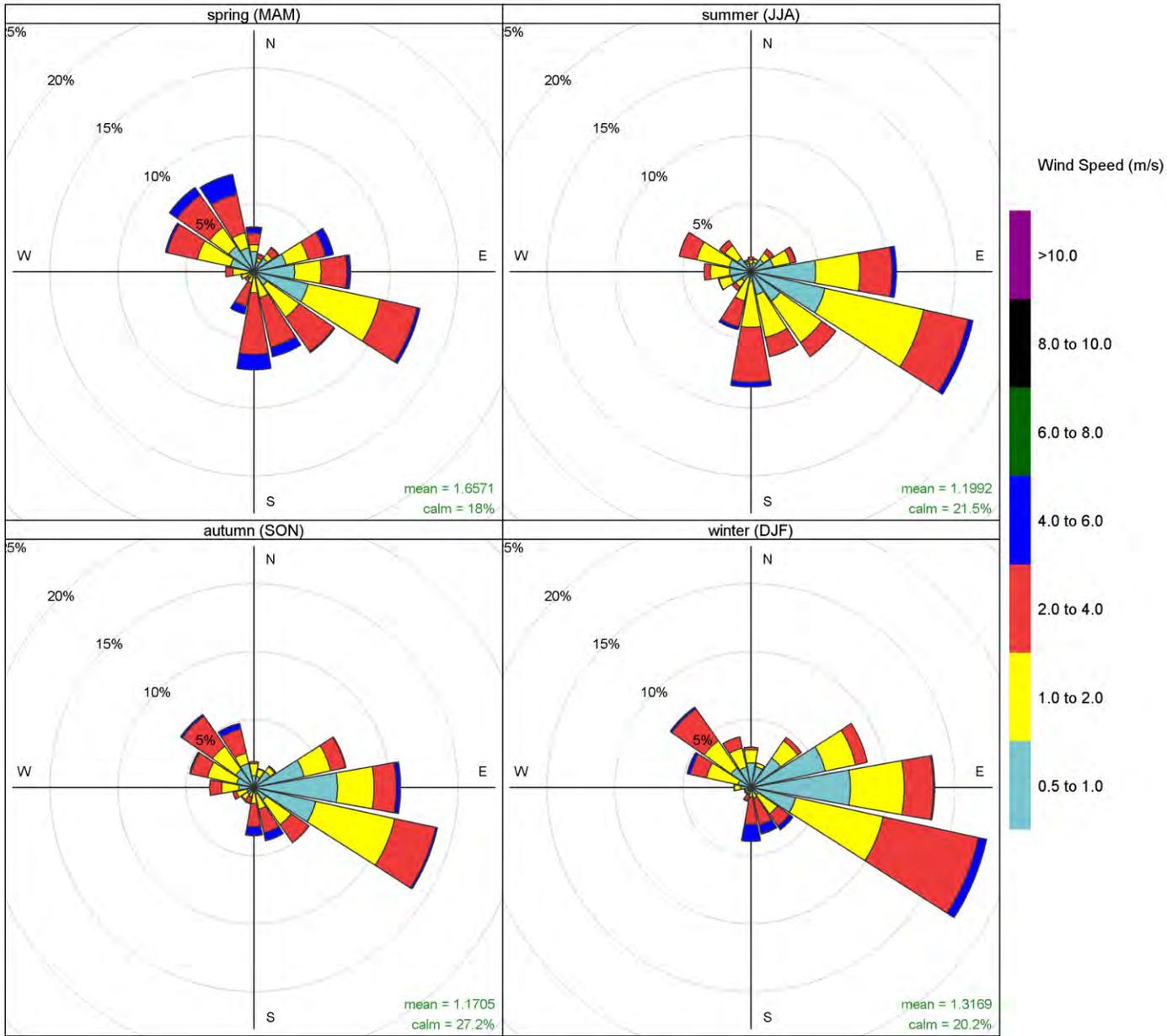
Frequency of counts by wind direction (%)

Figure C-6: Wind Roses by season for Station 9 (85<sup>th</sup> Avenue) for 2018.



Frequency of counts by wind direction (%)

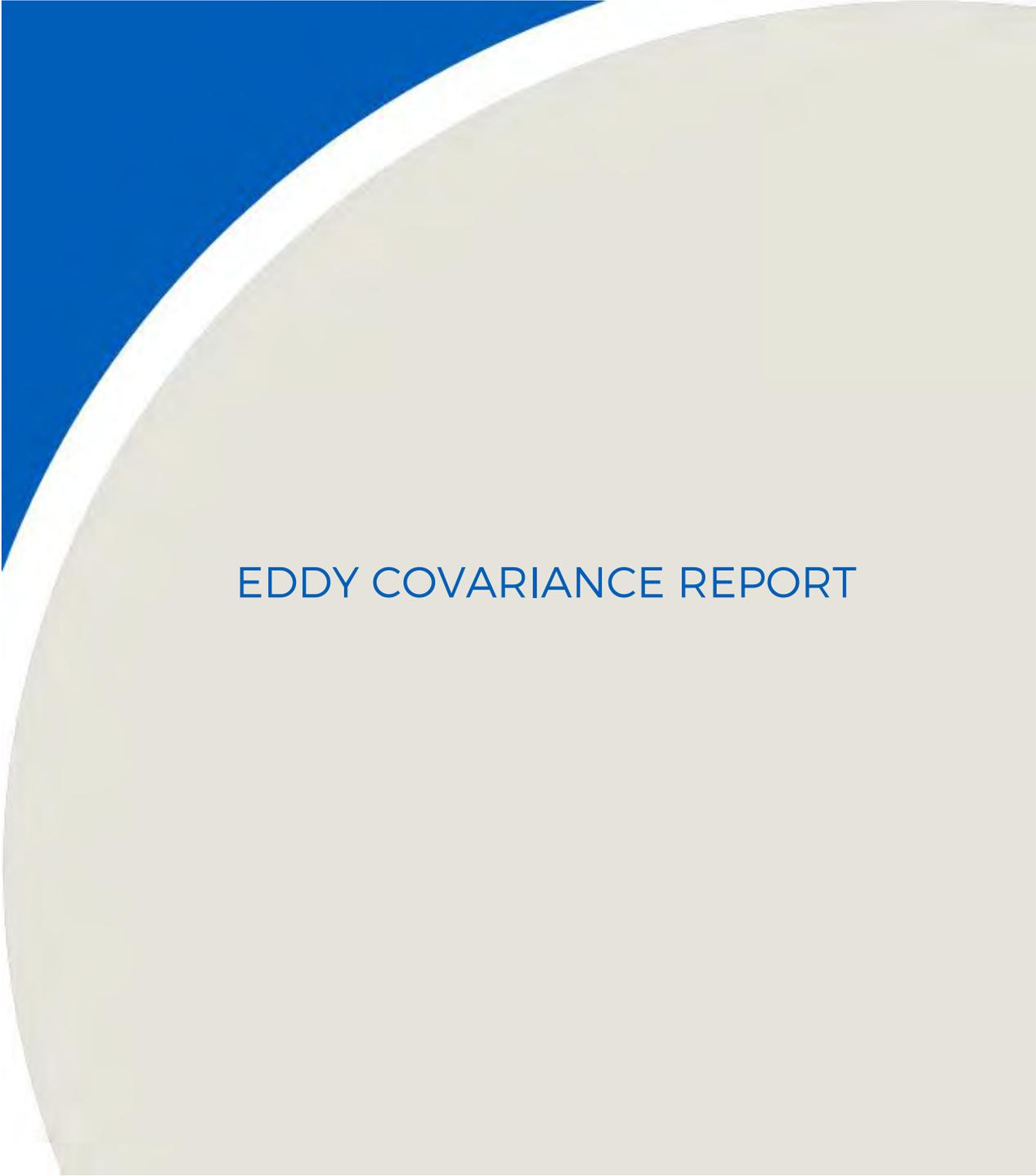
Figure C-7: Wind Roses by season for Station 10 (Tea Creek) for 2018.



Frequency of counts by wind direction (%)

Figure C-8: Wind Roses by season for Station 11 (Taylor) for 2018.

## APPENDIX D

A large decorative graphic on the page, featuring a blue triangle in the top-left corner and a large, light beige semi-circle that overlaps the triangle and extends across the middle of the page.

# EDDY COVARIANCE REPORT

## D1 INTRODUCTION AND METHODS

As part of the collection of baseline environmental data for the Site C project area, eddy covariance (EC) systems continue to be operated at two meteorological stations: Station 1 (Attachie Flat Upper Terrace) and Station 4 (Bear Flat). EC systems were installed at Station 4 (Bear Flat) on December 2, 2010 and at Station 1 (Attachie Flat Upper Terrace) on January 13, 2011. This report summarizes the results of the EC component of the baseline environmental measurement program for 2018.

The EC technique has become the standard method for measuring sensible heat flux ( $H$ ), latent heat flux ( $\lambda E$ ) and  $\text{CO}_2$  flux ( $F_c$ ) over footprints of  $\leq 1 \text{ km}^2$  (Baldocchi, 2003). Knowledge of the partitioning of available energy ( $R_n - G$ , or net radiation minus soil heat flux) between sensible and latent heat fluxes is critical for understanding the interaction of the measured ecosystem with the overall water cycle, atmospheric boundary layer development, weather, and climate (Wilson et al. 2002). Measurements of  $F_c$  yield the net ecosystem productivity (NEP)—the difference between gross ecosystem photosynthesis (GEP) and ecosystem respiration (R). NEP is a direct measure of whether an ecosystem is a source (NEP < 0), or a sink (NEP > 0) of atmospheric C over time and is a useful indicator of ecosystem health because it integrates the individual responses of GEP and R to weather and environmental variables. In addition, in managed forest or agricultural settings, NEP measurements can serve as a useful indicator of overall ecosystem response to a particular management practice (e.g. selective harvesting, no-tillage farming).

Since the installation, continuous 10 Hz measurements of the three components of the wind vector and air temperature have been made using a 3-dimensional ultrasonic anemometer (model CSAT3, Campbell Scientific Inc. (CSI), Logan, Utah), while 20 Hz turbulent fluctuations of  $\text{CO}_2$  and  $\text{H}_2\text{O}$  have been measured using an open-path infrared gas analyser (IRGA) (model LI-7500A, LI-COR, Inc., Lincoln, Nebraska). Signals were measured with a data logger (CSI, model CR1000) with a synchronous-device-for-measurement (SDM) connection. High frequency (HF) data were stored on a compact flash card that was replaced every 2-3 weeks. Half-hourly covariances and other statistics were calculated on the data logger (to provide near-real time diagnostics), and as well from the raw HF data using in-house MATLAB processing code.  $H$ ,  $\lambda E$  and  $F_c$  fluxes were calculated as the half-hourly covariances of the sonic air temperature,  $\text{H}_2\text{O}$  or  $\text{CO}_2$  mixing ratio with the vertical wind velocity ( $w$ ), respectively. Further details of the flux calculations can be found in Brown et al. (2010). Briefly, sensible heat ( $H$ ), latent heat ( $\lambda E$ ) and  $\text{CO}_2$  ( $F_c$ ) fluxes were calculated as the half-hourly covariances of the sonic air temperature,  $\text{H}_2\text{O}$  and  $\text{CO}_2$  mixing ratios with the vertical wind velocity ( $w$ ), respectively (Webb et al. 1980).

For example, in the case of  $\text{H}_2\text{O}$ ,  $\lambda E$  is calculated using

$$\lambda E = \lambda \rho_a \overline{w' s_v'}$$
 (1)

where  $\rho_a$  is the dry air density,  $w$  is the vertical wind velocity,  $s_v$  is the  $\text{H}_2\text{O}$  mixing ratio,  $\lambda$  is the latent heat of vaporization, and the primes indicate fluctuations from the half-hourly mean value and the overbar indicates the time average. The calculation is therefore a 30-minute block average with no detrending applied.

## D2 EC SYSTEM PERFORMANCE

### D2.1 System uptime/data loss

Protocols for data recovery, extraction, and re-processing high frequency EC data, and cleaning (i.e., removal of unreliable data and gap-filling) of the resulting half-hourly  $CO_2$  ( $F_c$ ), sensible heat ( $H$ ) and latent heat ( $\lambda E$ ) fluxes were unchanged from 2011-2018.

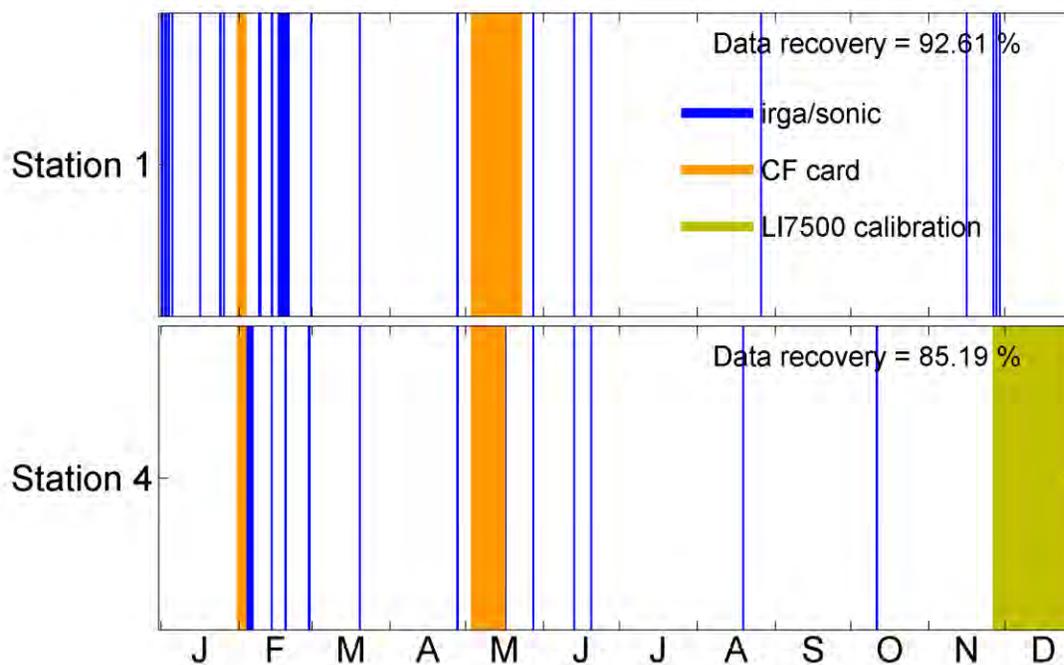


Figure D - 1. EC system performance for Stations 1 (Attachie Flat Upper Terrace), 2 (Attachie Flat Lower Terrace), 4 (Bear Flat) in 2018 indicating sources (IRGA/sonic anemometer failure, CF card malfunction, power (low battery voltage), IRGA calibration) of data loss prior to manual QA/QC of the data. Vertical bars indicate flux data loss. Annual data recovery percentage indicated in each panel.

EC system uptime prior to manual data screening for quality assurance/control (QC/QA) in 2018 was 93% at Station 1 (Attachie Flat Upper Terrace). This was a significant improvement over 2017 (70% uptime), due to less downtime required for calibration of the Li7500 instrument and improved site management. At Station 4 (Bear Flat) the annual EC system uptime was improved in 2018 to 85%, from 77% in 2017. The 8% difference between Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) was largely due to the availability one spare Li7500 instrument being used at Station 1 (Attachie Flat Upper Terrace) while the permanent instruments from Stations 1 (Attachie Flat Upper Terrace) and 2 (Attachie Flat Lower Terrace) were both sent to the manufacturer for calibration at the same time in Nov-Dec 2018.

## D2.2 QA/QC issues

### D2.2.1 Gap-filling

In a natural forest or grassland ecosystem, filling data gaps in the  $\lambda E$  and  $F_c$  fluxes would typically be accomplished using protocols slightly modified from those used in the Fluxnet Canada Research Network and the Canadian Carbon Program (Barr et al. 2004, Brown et al., 2010). This approach is best suited to natural ecosystems where the response of the local vegetation is largely the result of the integration of the phenological response of the individual species of plants and trees and environmental variables such as light, air temperature and soil temperature and moisture.

In the agricultural settings in which the Site C EC stations are situated, the biological response is affected by human factors, as the farmer is the one controlling the sowing and planting; hence the timing of the photosynthetic response cannot be captured in a model without more detailed knowledge of the actions of each individual farmer following spring thaw. While gap-filling the carbon balance flux components was accomplished using the same FCRN approach as in prior years, interpretation these fluxes during the gap-filled period should be done with some caution.

In contrast to the C-balance flux components, gap-filling of  $\lambda E$  was accomplished using the same energy balance closure model approach (Amiro et al., 2006) of previous years and introduced no additional uncertainty as  $H$  continued to be measured throughout the IRGA calibration period.

## D2.2.2 Uncertainty Analysis

Uncertainties associated with calculating annual totals of  $ET$ , NEP, GEP, and R from the half-hour EC fluxes were determined using techniques detailed extensively elsewhere (Brown et al. 2010, Krishnan et al. 2006, Morgenstern et al 2004). Random error was assessed using propagation of errors following Morgenstern et al. (2004), in which up to a 20% error is randomly assigned to each half-hourly measured flux (NEP or  $\lambda E$ ). The uncertainty due to the gapfilling algorithms was estimated using Monte Carlo simulation following the procedure of Krishnan et al. (2006). Briefly, gaps were created in annual NEP or  $\lambda E$  ranging from a half-hour to 10 days in length and a uniformly distributed random number generator was applied to day and night-time data separately so as to approximate the typical diurnal distribution of data gaps in the annual dataset for each site. For each iteration, the standard FCRN gapfilling approach as modified by Brown et al. (2010) discussed above was used to fill the gaps generated. This procedure was then repeated 1000 times, and the simulated annual values of NEP, R, GEP or  $ET$  were then sorted to determine the 95% confidence intervals. For the Site C EC stations, the combined random and systemic error introduced from the gap filling procedure amounted to  $\sim 10$  mm for the annual  $ET$  and  $\sim 30$  g C for the annual NEP. It should be noted that the IRGAs are removed for calibration at a time of year (February-March) when energy, water and carbon fluxes are very close to zero—hence they are relatively easy to model. The shift of the calibration period into the growing season necessarily increases the uncertainty involved in gap-filling from the values reported above as the daytime EC fluxes are higher and change more rapidly due to shifts in weather and agricultural practices.

Finally, as is standard Fluxnet protocol, the annual totals for  $ET$  and NEP reported below have not been corrected for energy balance closure. As noted in previous annual reports (Grant et al. 2012, 2013, 2014, 2016, 2017) the energy balance closure continues to be  $\sim 0.75$  for each of Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat). Hence, the EC fluxes could be up to 25% underestimated.

## D3 Results

### D3.1 Climate Measurements

The 2018 growing season (May-Sept) precipitation amounts at the EC stations were large compared to other years. Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) cumulative growing season precipitation were measured to be 312 and 290 mm, respectively. This is the highest recorded growing season precipitation measured at Station 1 (Attachie Flat Upper Terrace) next to 2013 when it was 287 mm. At Station 4 (Bear Flat) the amount measured in 2018 is comparative to 2016 (309 mm) and only the 4<sup>th</sup> largest since measurements began in 2011.

There was a cool start to 2018 and for all stations 5-day averaged air temperatures ( $T_{air}$ ) rose above zero in mid-April, peaking near 20 °C in May, June and July. Along with warmer than usual air temperatures in fall and early winter this resulted in 2018 having the warmest annual temperatures on record (15.4 and 15.5 °C for Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat), respectively). The soil temperatures ( $T_{soil}$ ) lagged the noted increase in air temperature by about 2-weeks in the early part of the growing season while snow melted and the soil responded to atmospheric heating.

The most notable difference in the environmental conditions among the EC stations was the increased soil temperatures and wind speeds at Station 1 (Attachie Flat Upper Terrace) (Fig. D-2). This is possibly due to differences in soil type and vegetation cover as well as Station 1 (Attachie Flat Upper Terrace) being more exposed to the elements (Fig. D-2).

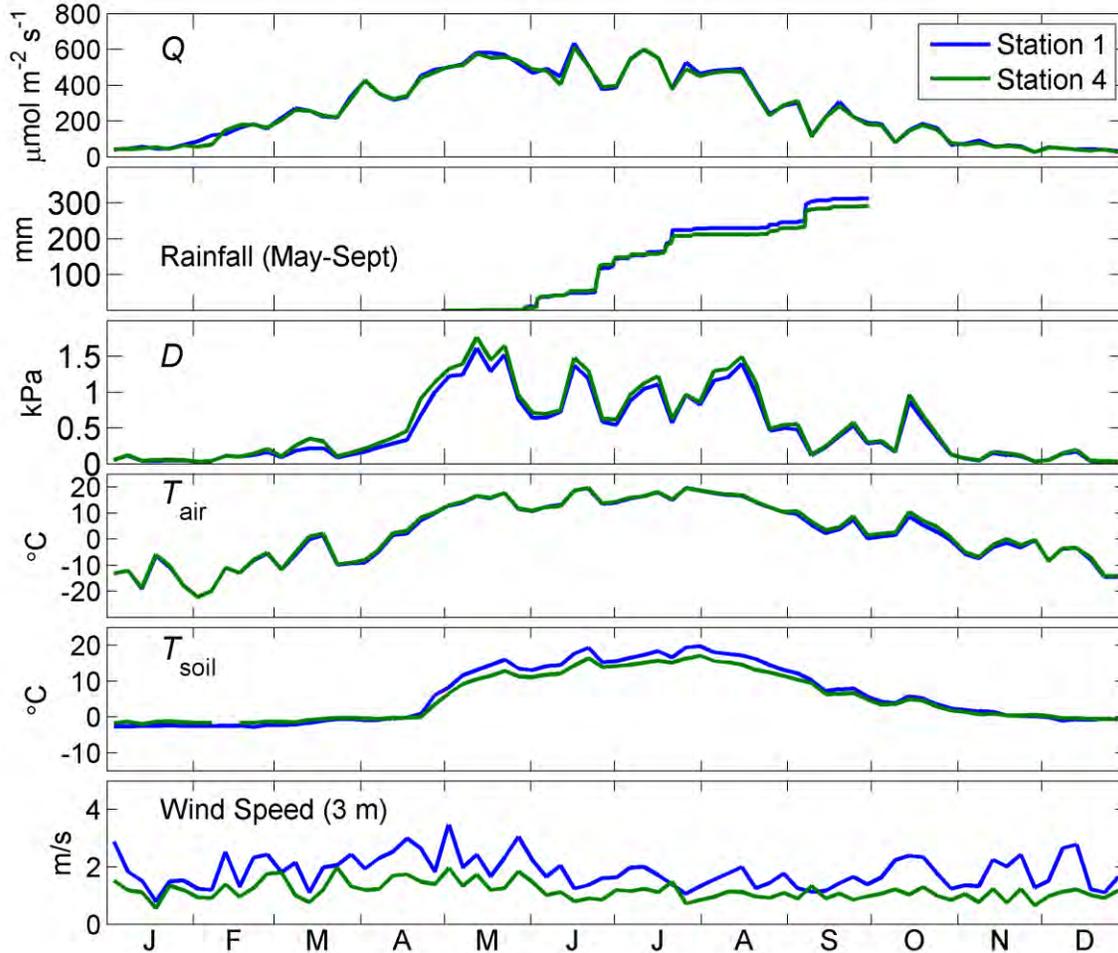


Figure D - 2. Five-day-averaged climate variables for Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) for 2018: (a) daytime average downwelling photosynthetically active radiation ( $Q$ ), (b) growing season cumulative rainfall, not provided (c) daytime average vapour pressure deficit ( $D$ ), (d) 24-h average air temperature ( $T_{air}$ ), (e) 24-h average soil temperature ( $T_{soil}$ ), and (f) 24-h sonic anemometer cup wind speed (3-m height).

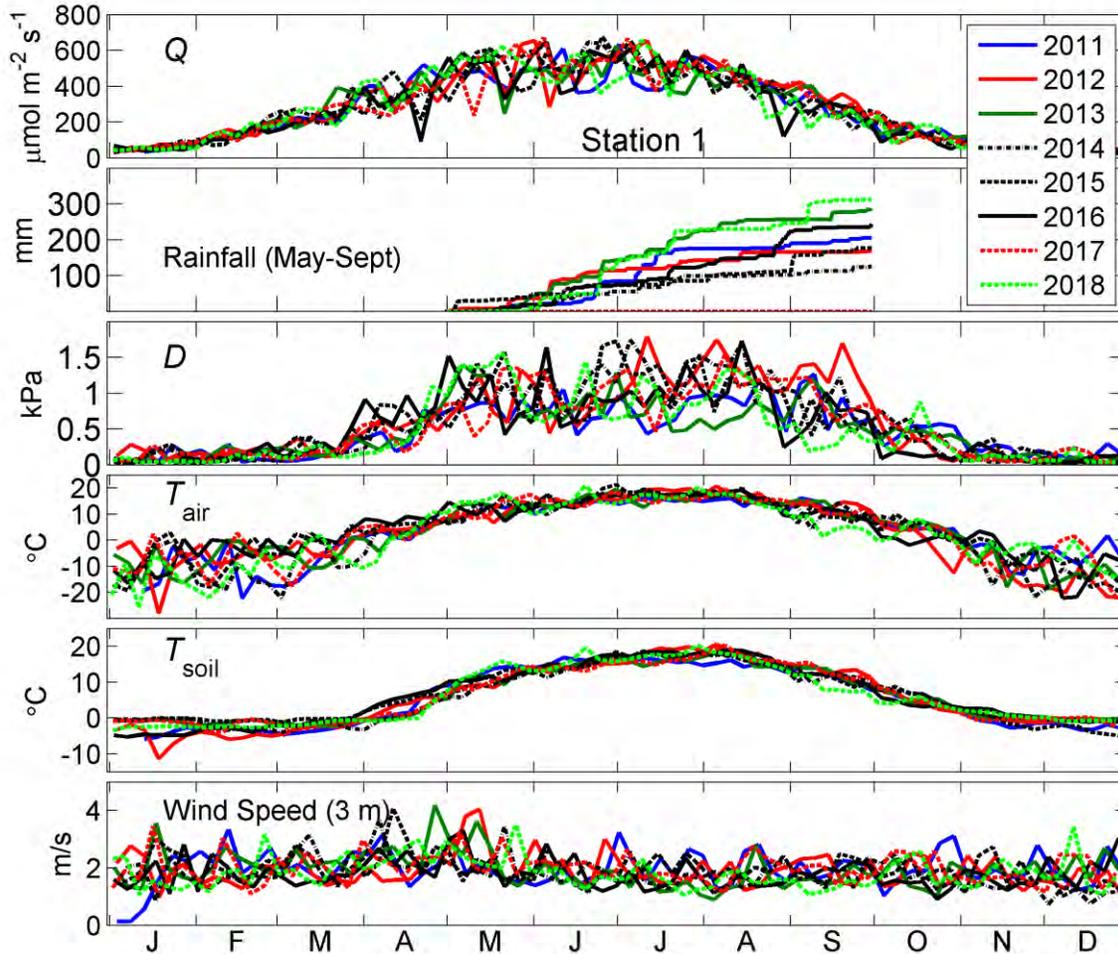
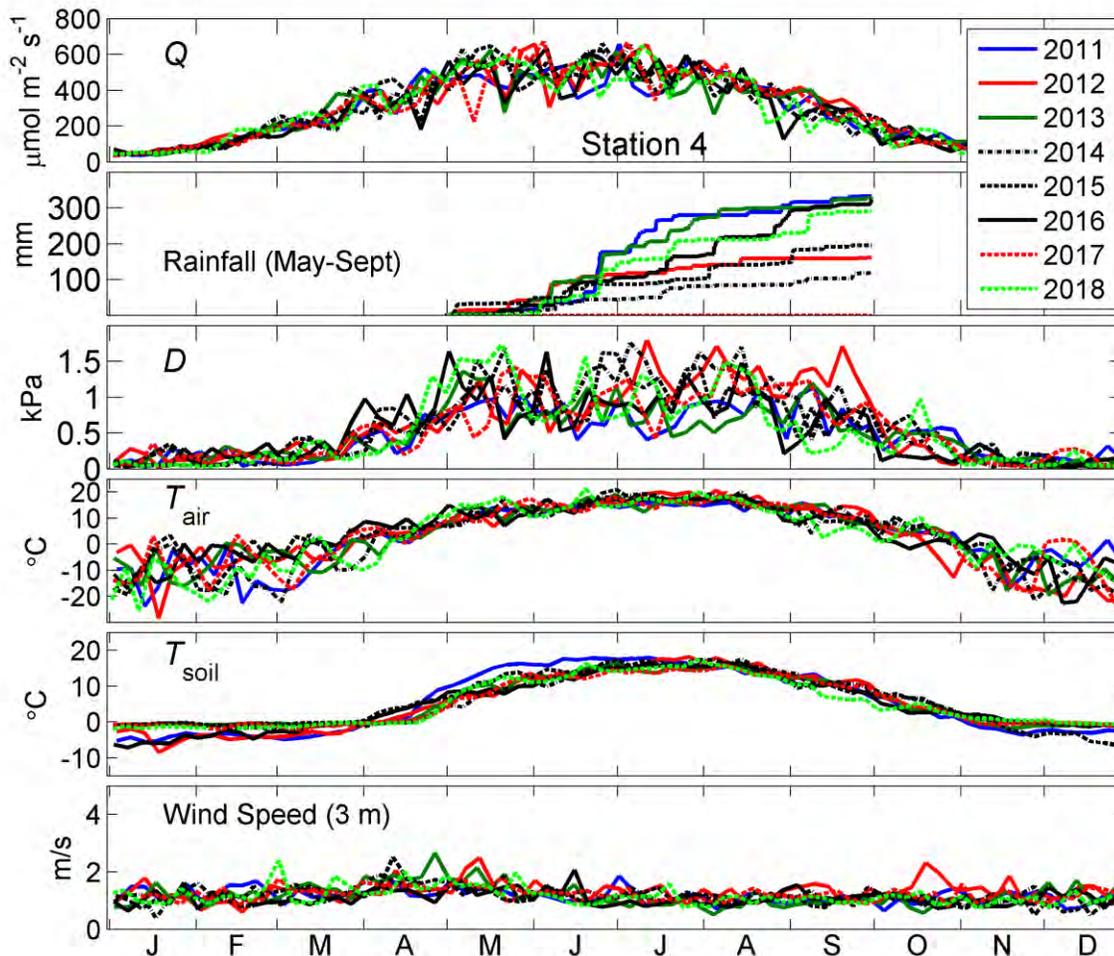


Figure D - 3. Five-day-averaged climate variables for Station 1 (Attachie Flat Upper Terrace) 2011-2018: (a) daytime average downwelling photosynthetically active radiation ( $Q$ ), (b) growing season cumulative rainfall, not included for 2017, (c) daytime average vapour pressure deficit ( $D$ ), (d) 24-h average air temperature ( $T_{air}$ ), (e) 24-h average soil temperature ( $T_{soil}$ ), and (f) 24-h sonic anemometer cup wind speed (3-m height).



**Figure D - 4. Five-day-averaged climate variables for Station 4 (Bear Flat) 2011-2018: (a) daytime average downwelling photosynthetically active radiation ( $Q$ ), (b) growing season cumulative rainfall, not included for 2017, (c) daytime average vapour pressure deficit ( $D$ ), (d) 24-h average air temperature ( $T_{\text{air}}$ ), (e) 24-h average soil temperature ( $T_{\text{soil}}$ ), and (f) 24-h sonic anemometer cup wind speed (3-m height).**

When the conditions from 2011-2018 are plotted by station (Fig. D-3, D-4), most notably there was a cool start to the year, similar to 2017. This was followed by a warm summer and spring that were both well supplied with water. The significant rainfall events in June, July and September resulted in low vapour pressure deficit ( $D$ ) at the end of the growing season. Early winter air temperatures are some of the warmest on record.

## D3.2 Energy Balance Measurements

From the available data in 2018 the seasonal pattern of variation in each component of the energy balance was similar to 2011 and 2013 (Fig. D-5, D-6, D-7), which experienced a moderately wet growing season and warm temperatures early in the growing season. The sensible heat ( $H$ ) flux at Station 1 (Attachie Flat Upper Terrace) was characteristically low in the early part of the growing season while much of the energy was partitioned into the latent flux and soil heat flux ( $G$ ) + storage ( $S_t$ ). The latent heat ( $\lambda E$ ) fluxes peaked at Station 1 (Attachie Flat Upper Terrace) in July. During this peak in  $\lambda E$  fluxes the field was dominated by forage grasses on one side and rapeseed on the other (**Attachment A.2.**). The magnitude of the  $\lambda E$  fluxes at Station 4 (Bear Flat) can be seen to peak higher in July when compared to Station 1 (Attachie Flat Upper Terrace) (Fig. D-5). Similar to other years both net radiation ( $R_n$ ) and  $\lambda E$  flux follow a decreasing trend at both sites through July and into September, when incoming radiation is seasonally reduced and water likely becomes more limited towards the end of summer.

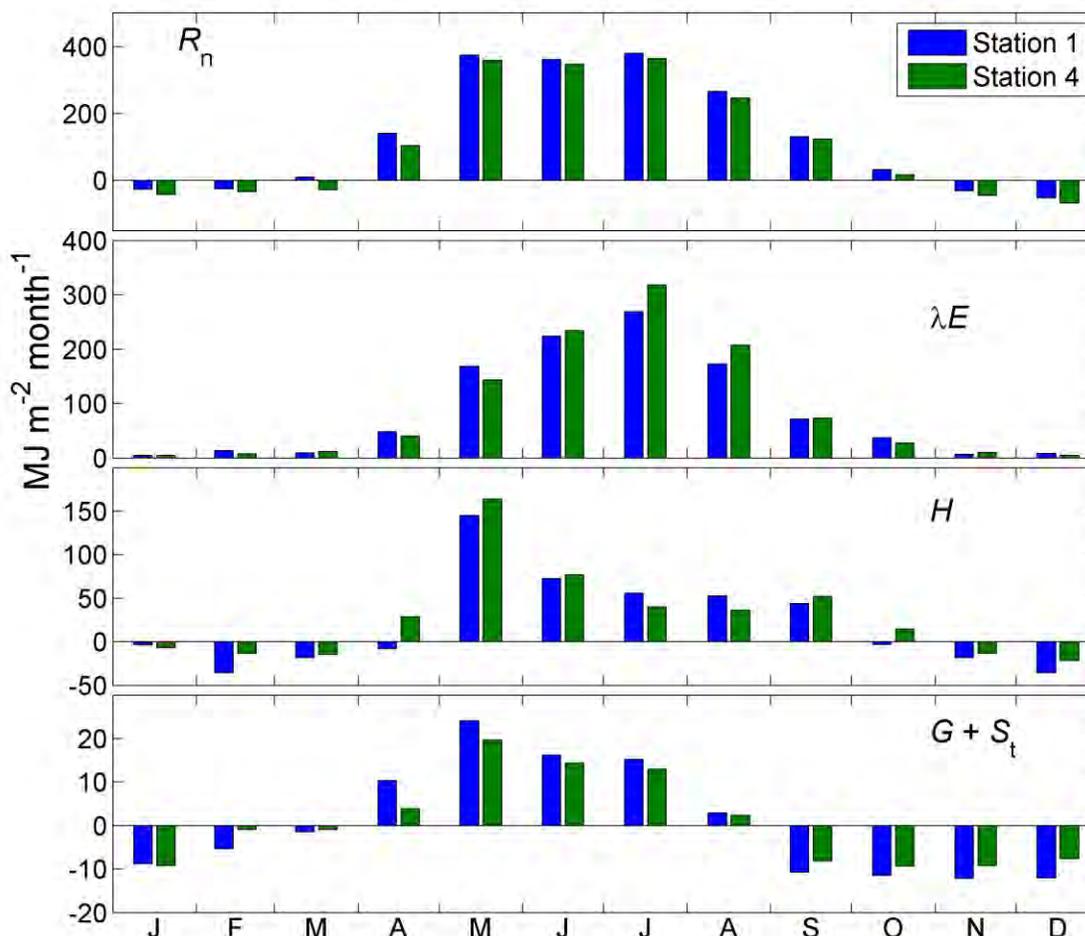


Figure D - 5. 2018 Annual energy balance for Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat), with monthly total energy flux by term (a)  $R_n$ , (b)  $\lambda E$ , (c)  $H$ , and (d)  $G + S_t$ .

An examination of the seasonal patterns of variation in the energy balance components at all of the stations for 2011-2018 (Fig. D-6, D-7) reveals similar patterns at Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) in three wetter years (2011, 2013, 2018), the three drier years (2012, 2014, 2015) and moderately wet 2016 and 2017. Specifically, in the two wetter years the  $\lambda E$  flux is dominant and remains higher later into the growing season while in dry years the  $H$  flux dominates. When compare to other years all radiation balance components were lower in April of 2018, indicating cooler temperatures and delayed start to the growing season. Both Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) had the highest  $\lambda E$  fluxes of all years, later in the growing season (July and August), hitting a record close to 300 MJ m<sup>-2</sup> in August. At Station 4 (Bear Flat), the interannual pattern was strengthened by the fact that the agricultural land management practices were consistent between pairs of wet and dry years: animals were grazed at Station 4 (Bear Flat) in two of the dry years (2012, 2014) whereas in the two wet years (2011, 2013) and in 2015, 2016 2017 and 2018 the pasture was left undisturbed.

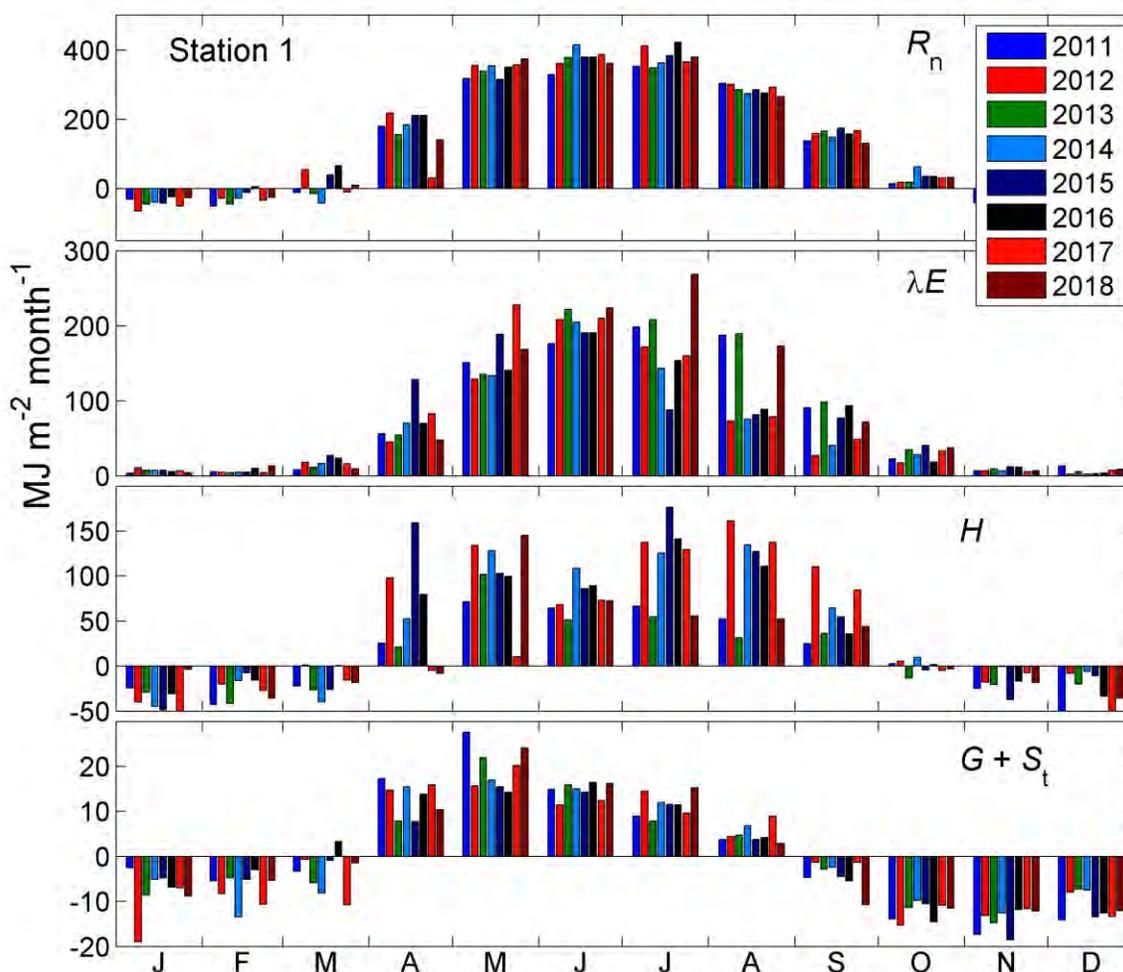


Figure D - 6. Annual energy balance for Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat), 2011-2018 with monthly total energy flux by term (a)  $R_n$ , (b)  $\lambda E$ , (c)  $H$ , and (d)  $G + S_t$ .

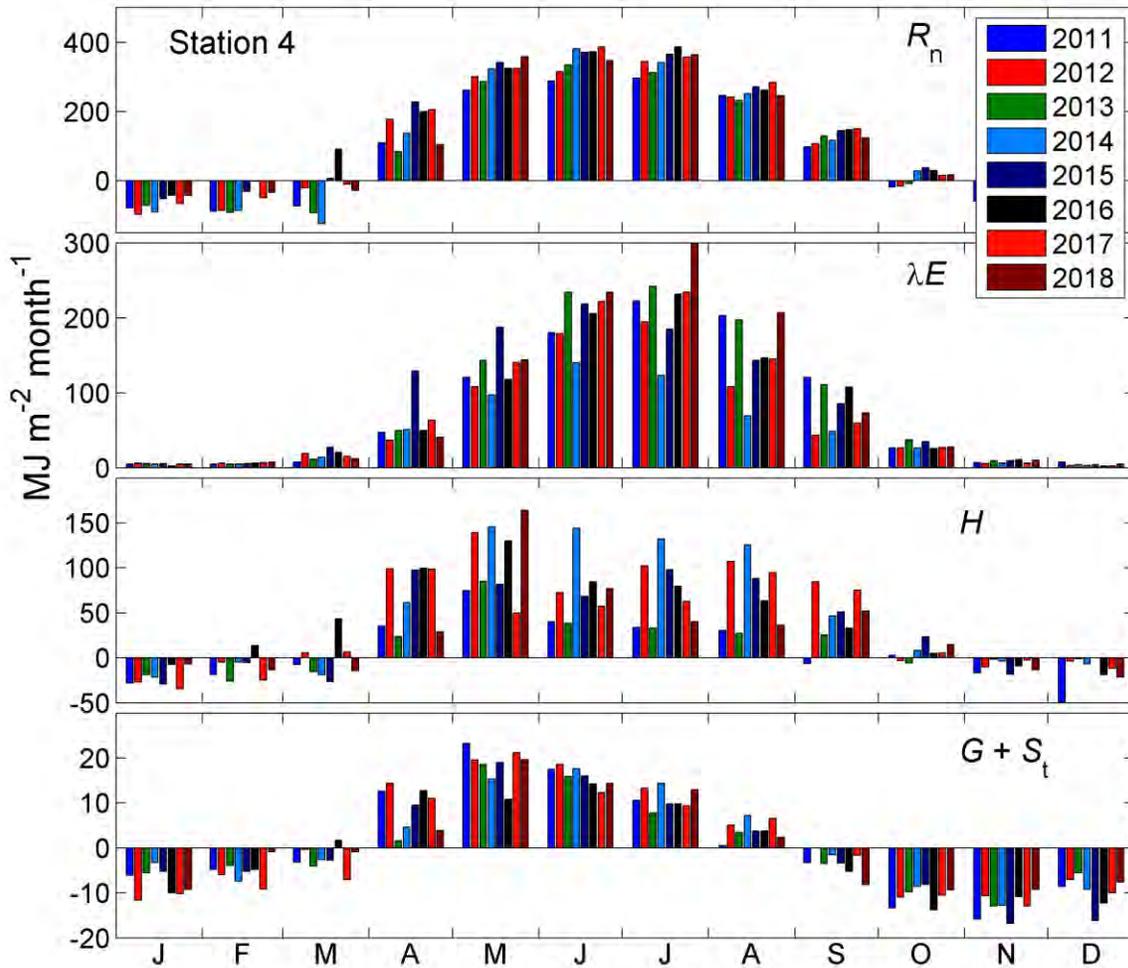


Figure D - 7. Annual energy balance for Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat), 2011-2018 with monthly total energy flux by term (a)  $R_n$ , (b)  $\lambda E$ , (c)  $H$ , and (d)  $G + S_t$ .

### D3.3 Evapotranspiration

Annual *ET* was similar for Stations 1 (Attachie Flat Upper Terrace) (413) and 4 (Bear Flat) (433 mm), with Station 4 (Bear Flat) exceeding Station 1 (Attachie Flat Upper Terrace) in July when the crop growing to the North of the Station 1 (Attachie Flat Upper Terrace) EC tower began to mature (Fig. D-8, Appendix A.2). These annual values are higher than all other preceding years. The monthly *ET* measured at Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) during July 2018 was the highest measured at both sites and for all years (Fig. D-9, D10). It can be seen that the slope of the cumulative *ET* for both stations during 2018 remains steeper than other years after June. This increase in *ET* later in the growing season, compared to other years, was likely the result of ample soil water availability due to significant rainfall events during June July and September and a very warm growing season in the region.

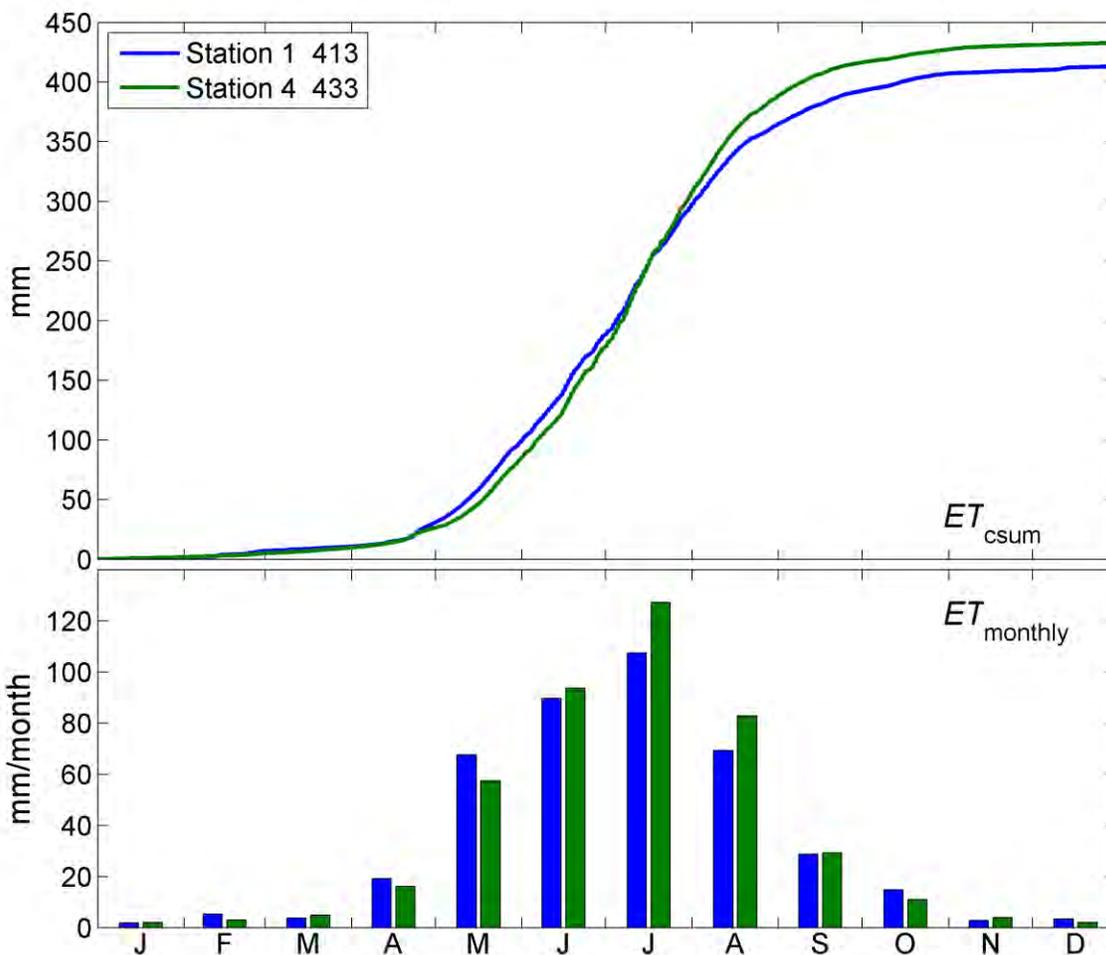


Figure D - 8. Cumulative ( $ET_{csum}$ ) and monthly ( $ET_{monthly}$ ) evapotranspiration at Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) for 2018. Annual ET totals in mm are shown in the legend.

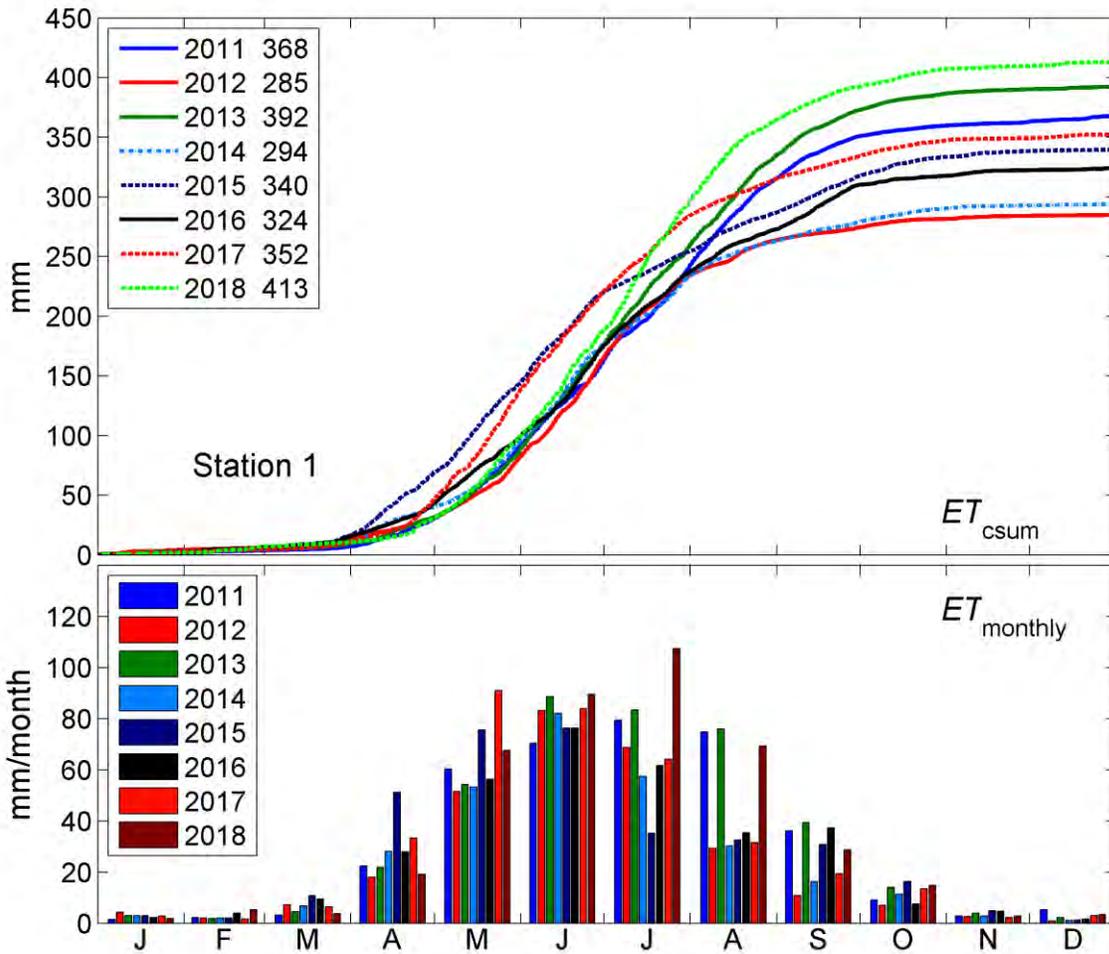


Figure D - 9. Annual cumulative ET (upper panels) monthly ET (lower panels) for Station 1 (Attachie Flat Upper Terrace), 2011-2018.

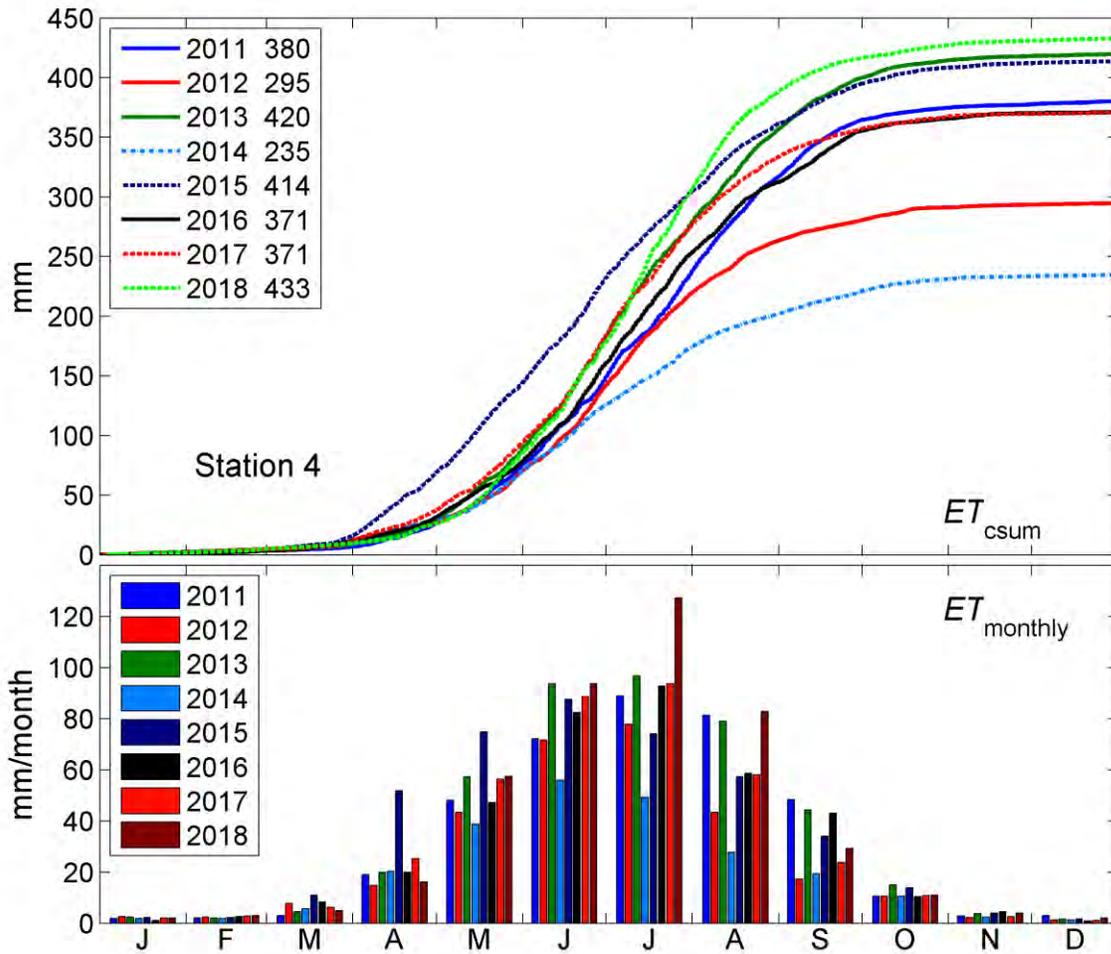


Figure D - 4. Annual cumulative ET (upper panels) monthly ET (lower panels) for Station 4 (Bear Flat), 2011-2018.

### D3.4 C balance

In 2018 Station 1 (Attachie Flat Upper Terrace) was a modest C-sink with annual net ecosystem production (NEP) of  $139 \text{ g C m}^{-2}$ , while Station 4 (Bear Flat) was a small C-source with annual NEP of  $-26 \text{ g C m}^{-2}$  (Fig. D-11). Both locations were C-sinks from March through August, with Station 4 (Bear Flat) showing significantly higher monthly ecosystem respiration (R) in June, July, August and September, whereas gross ecosystem productivity (GEP) at both sites was more similar in September. The balance between these two components was similar during the summer months as indicated by the similar slope of the cumulative NEP at that time and comparative monthly values, which then deviate in September due to the differences in R. This is likely due to the harvesting of the forage crop during September at Station 4 (Bear Flat) resulting in a significant drop in GEP with potentially enhance autotrophic respiration from the residue and root die off. At Station 1 (Attachie Flat Upper Terrace) the majority of the EC signal comes from the SW direction where the vegetation cover remained throughout fall. The *ET* and GEP at both locations follow the same seasonal pattern.

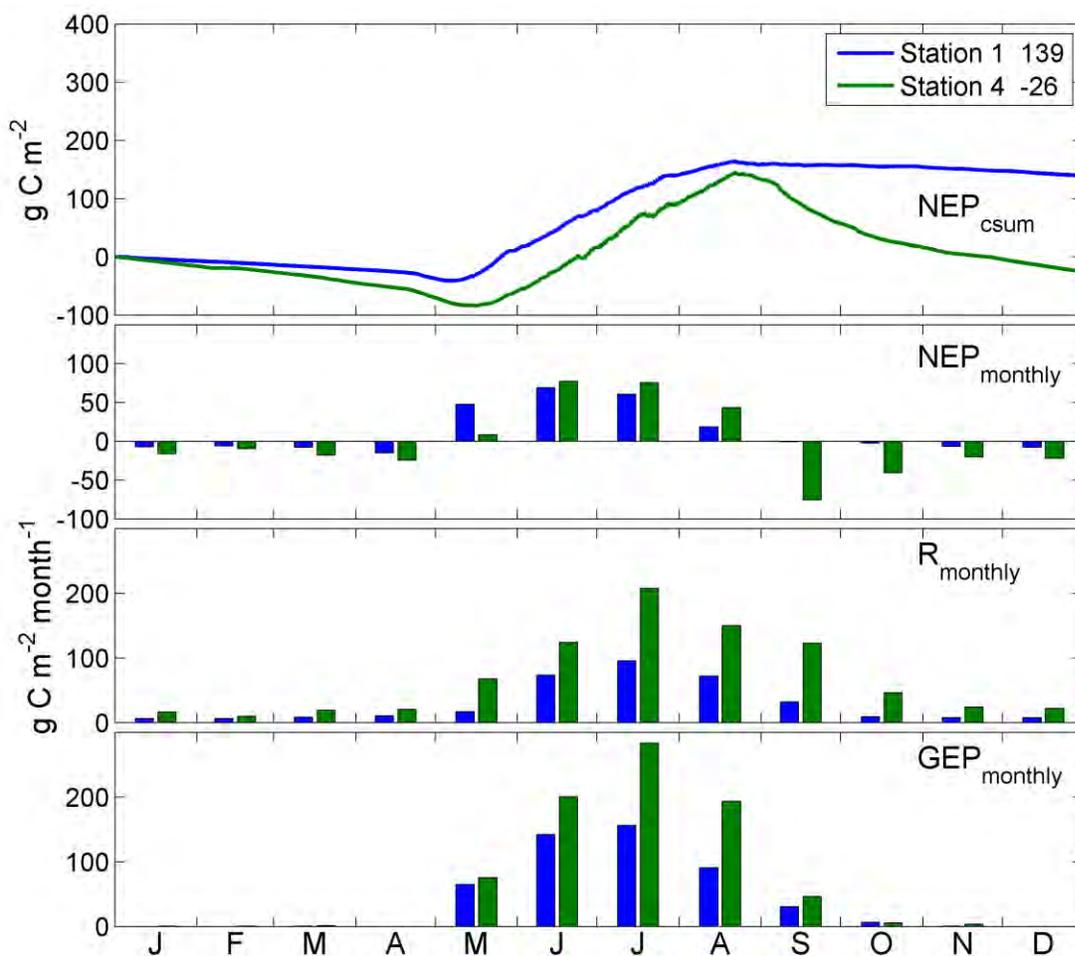


Figure D - 5. C balance components for 2018 at Station 1 (Attachie Flat Upper Terrace) and Station 4 (Bear Flat). (a) Annual cumulative NEP, (b) monthly NEP, (c) monthly R and (d) monthly GEP.

When the components of the C balance are examined for Station 1 (Attachie Flat Upper Terrace) between 2011-2018 (Fig. D-12), clear patterns of inter- and intra-annual variability in GEP and R emerge between normal-to-wet years and dry years. Station 1 (Attachie Flat Upper Terrace) is a C sinks (NEP > 0) during normal-to-wet years and becomes near C-neutral during dry years (2012 and 2014). Station 4 (Bear Flat) follows the same pattern through 2015 whereafter the C-balance is largely net-neutral and this seems to be the result of increased R during the late summer and into fall, as was previously described in more detail for 2018.

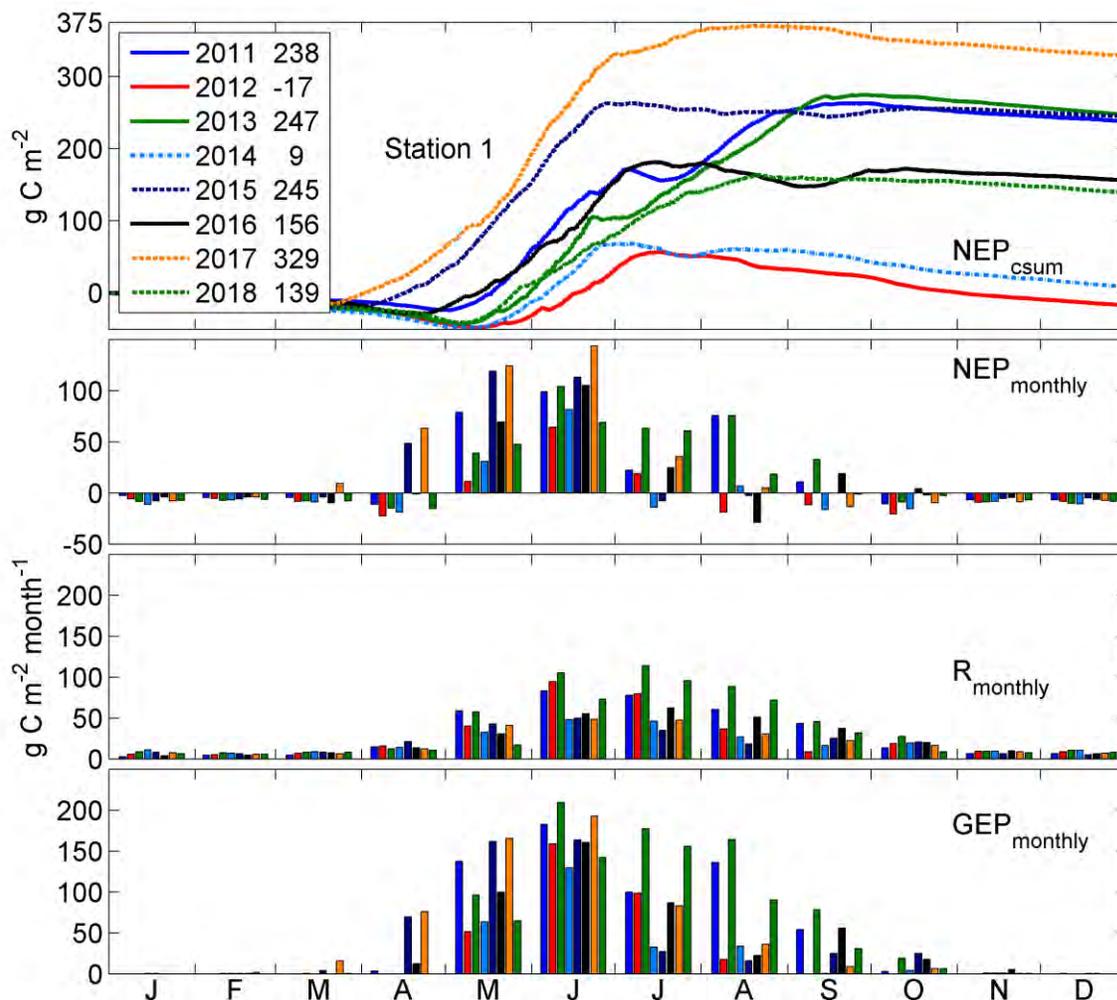
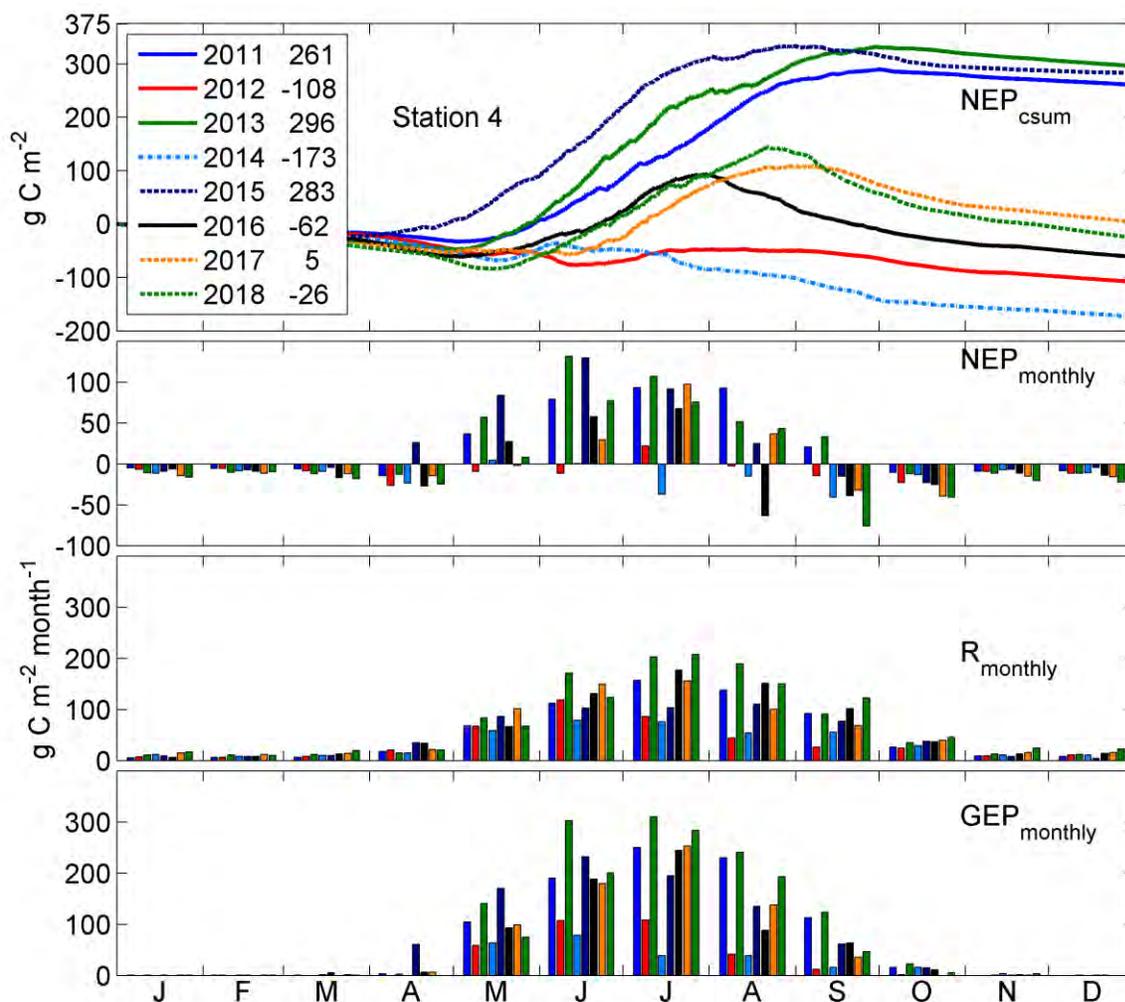


Figure D - 6. C balance components for 2011-2018 for Station 1 (Attachie Flat Upper Terrace). (a) Annual cumulative NEP, (b) monthly NEP, (c) monthly R and (d) monthly GEP.



**Figure D - 7. C balance components for 2011-2018 for Station 4 (Bear Flat). (a) Annual cumulative NEP, (b) monthly NEP, (c) monthly R and (d) monthly GEP.**

The carbon balance gap-filling approach used works best in natural ecosystem settings could be improved with more information regarding the precise timing and nature of agricultural practices (ploughing, sowing, irrigation, crop types etc.). A relatively low-expense addition to the EC sites that would aid in this task is the use of a digital camera mounted to each EC tower and programmed to record an image every day. Much detail can be gleaned from such images regarding the precise timing and nature of agricultural management practices. This could then be incorporated in the empirical models used to gapfill NEP, GEP and R.

### D3.5 EC flux measurement summary 2011-2018

Figure D-14 summarizes results from 2011-2018; the data used in the figure is presented in Attachment A (Table A1). The top panel indicates the agricultural land management status for each station for each year, and the panels below summarize respectively: growing season rainfall, mean growing season air temperature, annual  $ET$ , mean growing season Bowen ratio ( $\beta = H/\lambda E$ ), and finally annual NEP, R and GEP. The growing season is defined as the time period including May-September.

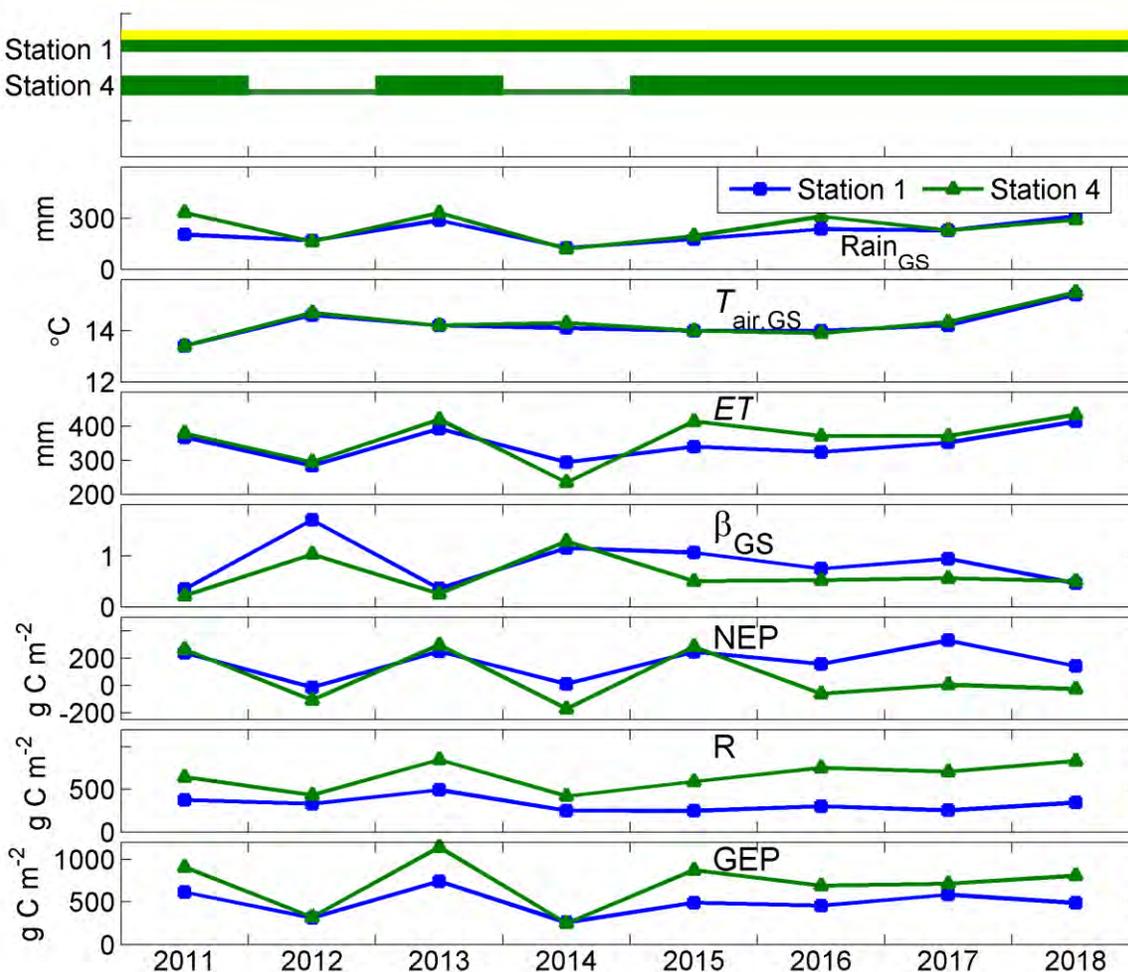


Figure D - 8. Summary of eddy covariance results 2011-2017. The top panel indicates the agricultural land management status for each station for each year (green and yellow bars=cultivated with crops, green bars=ungrazed pasture; thin green bar =grazed pasture; brown bar=bare soil) and the panels below summarize, respectively: growing season rainfall, mean growing season air temperature, annual  $ET$ , mean growing season Bowen ratio ( $\beta = H/\lambda E$ ), and annual NEP, R and GEP.

The pattern of inter-annual differences in these variables between wet and dry years at Stations 1 (Attachie Flat Upper Terrace) and 4 (Bear Flat) are very similar, with sensible heat transfer dominating dry years ( $\beta \geq 1$ ) and latent heat transfer dominating normal to wet years ( $\beta < 1$ ). With no significant agricultural management changes between 2016 and 2018, and similar climate conditions it is reassuring to see ET and NEP values remain fairly consistent, with differences largely accounted for by differences in water supply during the growing season. The uptick in ET for 2018 can largely be explained by the well watered and warm growing season.

## D4 Summary

EC system uptime in 2018 was 93% at Station 1 (Attachie Flat Upper Terrace). This was a significant improvement over 2017 (70% uptime), due to less downtime required for calibration of the Li7500 instrument and improved site management. At Station 4 (Bear Flat) the annual EC system uptime was improved in 2018 to 85%, from 77% in 2017.

In 2018 there was a cool start to the growing season, similar to 2017, that was followed by a warm summer and fall with above average precipitation amounts spread evenly across the growing season. The growing season rainfall at Station 1 (Attachie Flat Upper Terrace) was 228 mm in 2017 and 312 mm in 2018, while at Station 4 (Bear Flat) it was 228 mm and 290 mm respectively. Warm temperatures were experienced through the growing season and into fall in the region, resulting in 2018 being the warmest year on record.

The 2018 annual evapotranspiration (ET) at the two stations were the highest recorded and continue an upward trend beginning in 2016. At Station 1 (Attachie Flat Upper Terrace) ET was measured (413 mm) to be over 120 mm more than the lowest recorded ET at that location in 2012 (294 mm). At Station 4 (Bear Flat) ET was measured (433 mm) to be nearly 200 mm more than the lowest recorded ET at that location in 2012 (235 mm). Comparatively 2018 was a much wetter and warmer year at both locations and this is thought to largely explain the high ET. At Station 1 (Attachie Flat Upper Terrace) the land management remained the same for the aforementioned years while at Station 4 (Bear Flat) there was grazed pasture in 2012 and ungrazed pasture in 2018 and so it is likely that this had an impact on ET alongside climate related differences. It is hypothesized that the reduced vegetation cover resulting from grazing would reduce transpiration more than any increases in evaporation due to increased soil exposure.

In 2018 Station 1 (Attachie Flat Upper Terrace) was a modest C-sink with annual net ecosystem production (NEP) of  $139 \text{ g C m}^{-2}$ , while Station 4 (Bear Flat) was a small C-source with annual NEP of  $-26 \text{ g C m}^{-2}$  (Fig. D-11). The C-sink potential at both locations was strongest during June, July and August. Thereafter gains in gross ecosystem photosynthesis (GEP) can be seen to drop. The ET and GEP at both locations follow the same seasonal pattern with increasing photosynthetic activity resulting in increases in transpiration. It is likely that the higher monthly R at Station 4 (Bear Flat) is the result of decomposing plant residuals from the previous year when the pasture was not harvested. The difference in R at Station 4 (Bear Flat) compared to Station 1 (Attachie Flat Upper Terrace) later in the growing season is likely due to the harvesting of the forage crop during September at Station 4 (Bear Flat) resulting in a significant drop in GEP with potentially enhance heterotrophic respiration from the residue and root die off.

## D5 REFERENCES

- Amiro B.D., Barr A.G., Black T.A., Iwashita H., Kljun N., McCaughey J.H., Morgenstern K., Murayama S., Nesic Z., Orchansky A.L., and Saigusa N. 2006. Carbon, energy and water fluxes at mature and disturbed forest sites, Saskatchewan, Canada. *Agricultural and Forest Meteorology*: 136, 237–251.
- Baldocchi, D.D. 2003. Assessing the eddy covariance technique for evaluating carbon dioxide exchange rates of ecosystems: past, present and future. *Global Change Biology*: 9, 479–492.
- Barr, A.G., Black, T.A., Hogg, E.H., Kljun, N., Morgenstern, K., Nesic, Z., 2004. Inter-annual variability in the leaf area index of a boreal aspen-hazelnut forest in relation to net ecosystem production. *Agricultural and Forest Meteorology*: 126, 237–255.
- Brown M., Black T.A., Nesic Z., Foord V.N., Spittlehouse D.L., Fredeen A.L., Grant N.J., Burton P.J., Trofymow J.A. 2010. Impact of mountain pine beetle on the net ecosystem production of Lodgepole pine stands in British Columbia. *Agricultural and Forest Meteorology*: 150, 254-264.
- Grant, N.J., Black, A., and Nesic, Z. 2012. Eddy-Covariance Measurements of Energy, Water and Carbon Fluxes at Upper Attachie (Station 1), Lower Attachie (Station 2) and Bear Flat (Station 4): 2011 Summary. Report submitted to RWDI Air, Inc.
- Grant, N.J., Black, A. and Nesic, Z. 2013. Eddy-Covariance Measurements of Energy, Water and Carbon Fluxes at Upper Attachie (Station 1), Lower Attachie (Station 2) and Bear Flat (Station 4): 2012 Summary. Report submitted to RWDI Air, Inc.
- Grant, N.J., Black, A., and Nesic, Z. 2014. Eddy-Covariance Measurements of Energy, Water and Carbon Fluxes at Upper Attachie (Station 1), Lower Attachie (Station 2) and Bear Flat (Station 4): 2013 Summary. Report submitted to RWDI Air, Inc.
- Grant, N.J., Black, A., and Nesic, Z. 2015. Eddy-Covariance Measurements of Energy, Water and Carbon Fluxes at Upper Attachie (Station 1), Lower Attachie (Station 2) and Bear Flat (Station 4): 2014 Summary. Report submitted to RWDI Air, Inc.
- Grant, N.J., Black, A., and Nesic, Z. 2016. Eddy-Covariance Measurements of Energy, Water and Carbon Fluxes at Upper Attachie (Station 1), Lower Attachie (Station 2) and Bear Flat (Station 4): 2015 Summary. Report submitted to RWDI Air, Inc.
- Hawthorne, I., Grant, N.J., Black, A. and Nesic, Z. 2017. Eddy-Covariance Measurements of Energy, Water and Carbon Fluxes at Upper Attachie (Station 1), Lower Attachie (Station 2) and Bear Flat (Station 4): 2016 Summary. Report submitted to RWDI Air, Inc.
- Krishnan, P., Black, T.A., Grant, N.J., Barr, A.G., Hogg, E.H. Jassal, R.S., and Morgenstern, K, 2006. Impact of changing soil moisture distribution on net ecosystem productivity of a boreal aspen forest during and following drought. *Agricultural and Forest Meteorology*: 139, 208–223.
- Morgenstern, K., Black, T.A., Humphreys, E.R., Griffis, T.J, Drewitt, G.B., Cai, T., Nesic, Z., Spittlehouse, D.L., and Livingston, N.J. 2004. Sensitivity and uncertainty of the carbon balance of a pacific northwest Douglas-fir forest during an el Niño/La Niña cycle. *Agricultural and Forest Meteorology*: 123, 201–219.
- Wilson K, et al. 2002. Energy balance closure at FLUXNET sites. *Agricultural and Forest Meteorology*: 113:223-243.



# ATTACHMENT. A

## 1. Climate and EC data at Stations 1 (Attachie Flat Upper Terrace), 2 (Attachie Flat Lower Terrace, and 4 (Bear Flat) for 2011-2018.

	Station 1 (Attachie Flat Upper Terrace)				Station 4 (Bear Flat)			
	2011	2012	2013	2014	2011	2012	2013	2014
<sup>b</sup> Rainfall (mm)	204	168	287	125	332	162	331	119
<sup>b</sup> T <sub>air</sub> (°C)	13.4	14.6	14.2	14.1	13.4	14.7	14.2	14.3
<sup>c</sup> ET (mm)	367	284	392	294	379	295	420	235
<sup>b</sup> β	0.347	1.70	0.356	1.15	0.218	1.03	0.253	1.28
<sup>c</sup> NEP (g C m <sup>-2</sup> )	238	-17	247	9	261	-108	296	-173
<sup>c</sup> R (g C m <sup>-2</sup> )	376	330	494	250	645	430	846	419
<sup>c</sup> GEP (g C m <sup>-2</sup> )	614	313	741	259	906	322	1142	246

<sup>b</sup> denotes growing season total (Rainfall) or mean (T<sub>air</sub>, β)

<sup>c</sup> denotes annual totals

	Station 1 (Attachie Flat Upper Terrace)				Station 4 (Bear Flat)			
	2015	2016	2017	<b>2018</b>	2015	2016	2017	<b>2018</b>
<sup>b</sup> Rainfall (mm)	176	235	228	<b>312</b>	195	309	228	<b>290</b>
<sup>b</sup> T <sub>air</sub> (°C)	14.0	14.0	14.28	<b>15.4</b>	14.0	13.9	14.34	<b>15.5</b>
<sup>c</sup> ET (mm)	340	324	352	<b>413</b>	414	371	371	<b>433</b>
<sup>b</sup> β	1.06	0.75	0.94	<b>0.46</b>	0.5	0.52	0.56	<b>0.5</b>
<sup>c</sup> NEP (g C m <sup>-2</sup> )	245	156	329	<b>141</b>	283	-62	5	<b>-27</b>
<sup>c</sup> R (g C m <sup>-2</sup> )	246	302	254	<b>344</b>	591	752	707	<b>833</b>
<sup>c</sup> GEP (g C m <sup>-2</sup> )	491	457	584	<b>486</b>	874	691	713	<b>806</b>

<sup>b</sup> denotes growing season total (Rainfall) or mean (T<sub>air</sub>, β)

<sup>c</sup> denotes annual totals

## 2. Site photos



2018-04-06



2018-05-04



2018-05-15



2018-06-14



2018-06-29



2018-07-19



2018-07-25



2018-08-16



2018-09-05



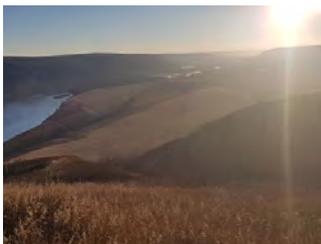
2018-09-26



2018-09-26



2018-10-23



2018-10-23



2018-11-27

**Figure D - 9. Station 1 (Attachie Flat Upper Terrace) site photos from April to November, 2018. A view of the land-cover from a distance is provided, where available.**



2018-05-15



2018-06-14



2018-07-18



2018-08-16



2018-09-05



2018-09-26



2018-10-23



2018-11-27

**Figure D - 10. Station 4 (Bear Flat) site photos from January-November, 2018. A view of the land-cover from a distance is provided, where available.**

3. Hardware components of the climate and eddy covariance systems at Station 4 (Bear Flat).

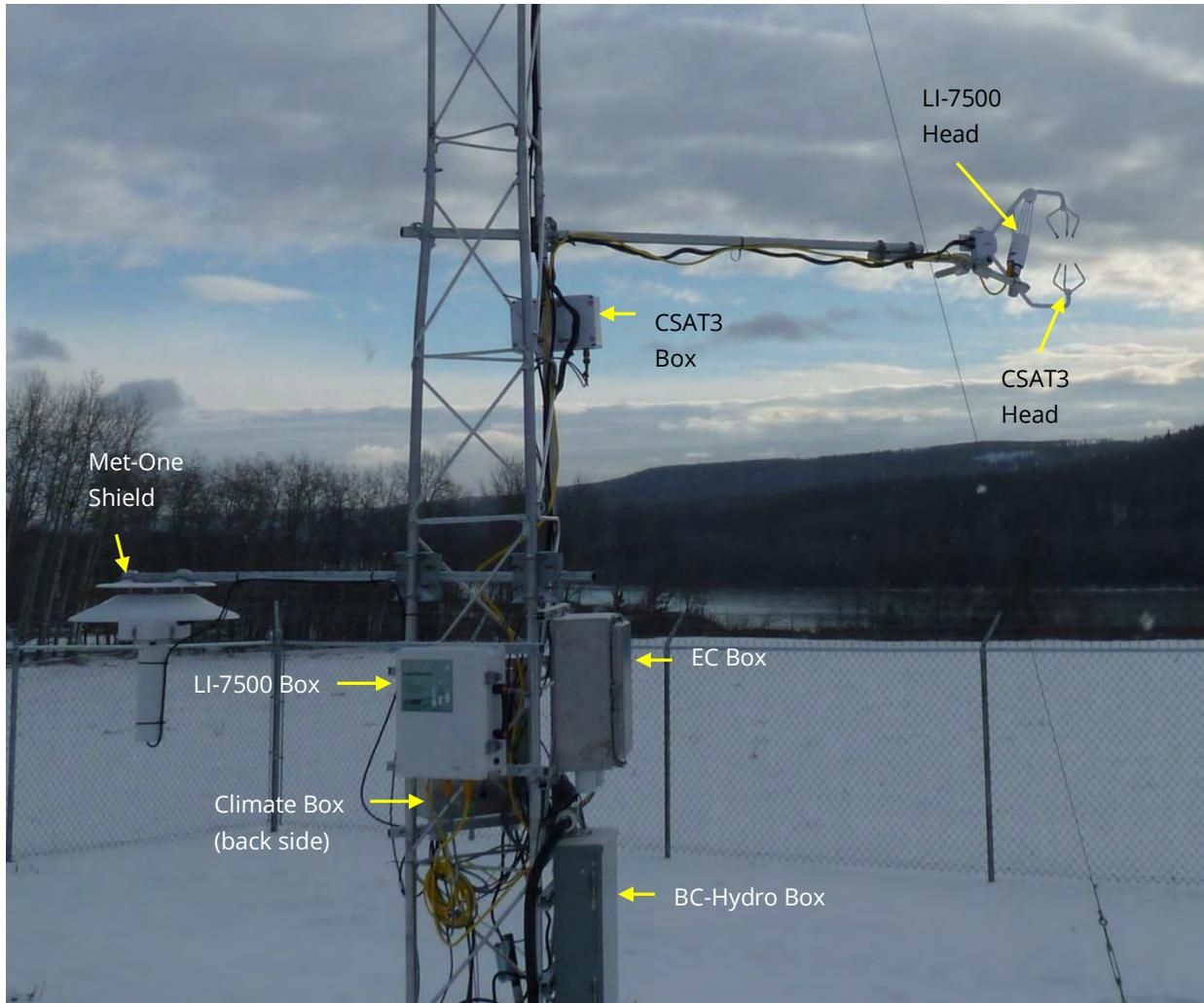


Figure D - 17. Hardware components of the climate and eddy covariance systems at Station 4 (Bear Flat).

#### 4. List of Symbols and acronyms

Symbol / Acronym	Units	Definition
C		Carbon
CO <sub>2</sub>		carbon dioxide
DVD		digital video disc storage media (4.5 GB)
EC		eddy covariance
FCRN		Fluxnet Canada Research Network
IRGA		infrared gas analyzer
NEP	$\mu\text{mol m}^{-2} \text{s}^{-1}$ or $\text{g C m}^{-2} \text{time}^{-1}$	net ecosystem production
NEP <sub>csum</sub>	$\text{g C m}^{-2}$	cumulative net ecosystem production
NEP <sub>monthly</sub>	$\text{g C m}^{-2} \text{month}^{-1}$	monthly total NEP
PAR	$\mu\text{mol m}^{-2} \text{s}^{-1}$	photosynthetically active radiation flux
D	kPa	vapour pressure deficit
ET	$\text{mm time}^{-1}$	Evapotranspiration
ET <sub>csum</sub>	mm	cumulative evapotranspiration
G	$\text{W m}^{-2}$	soil surface heat flux
GEP	$\mu\text{mol m}^{-2} \text{s}^{-1}$ or $\text{g C m}^{-2} \text{time}^{-1}$	gross ecosystem photosynthesis
GEP <sub>monthly</sub>	$\text{g C m}^{-2} \text{month}^{-1}$	Monthly total GEP
H	$\text{W m}^{-2}$	sensible heat flux
Q	$\mu\text{mol m}^{-2} \text{s}^{-1}$	downwelling photosynthetically active radiation (calculated as $= 2 R_s$ in $\text{W m}^{-2}$ )
QA/QC		quality control/quality assurance
$R_n$	$\text{W m}^{-2}$	net radiation flux
$R_a$	$\text{W m}^{-2}$	available energy flux ( $= R_n - G - S_t$ )
R	$\mu\text{mol m}^{-2} \text{s}^{-1}$ or $\text{g C m}^{-2} \text{time}^{-1}$	ecosystem respiration
R <sub>monthly</sub>	$\text{g C m}^{-2} \text{month}^{-1}$	Monthly total R
$R_s$	$\text{W m}^{-2}$	downwelling shortwave radiation
$S_t$	$\text{W m}^{-2}$ (per unit ground area)	sum of the rate of change in energy storage in the air between the EC sensors and the ground surface,
$T_{\text{air}}$	°C	air temperature
$T_{\text{soil}}$	°C	soil temperature at the 4-cm depth
$U_*$	$\text{m s}^{-1}$	friction velocity
$\lambda E$	$\text{W m}^{-2}$	latent heat flux
B		Bowen Ratio ( $= H/\lambda E$ )

## APPENDIX E

A large decorative graphic on the page. It features a blue triangular shape in the top-left corner, a white curved line separating it from a large light-grey circular area, and a white curved line separating the grey area from the rest of the page.

# AIR QUALITY ALERT RESPONSE

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
110	2018-02-27 4:00	IN Alert 'PM10 > 90% Alert': PM10 (48.1 µg/m3) at Stn 7B/C: North Camp for 2018-02-27 04:00 MST.	in	90%	PM10	Station 7C	No	N/A	No	WSW	<b>PRHP:</b> There was two RWDI air quality notifications for the week of February 25 - March 03, 2018. The first was on February 27th, no mitigation measures were implemented due to daily environmental monitoring observing no issues with air quality. On March 1st here was heavy snowfall and left bank excavation was shut down at 4pm due to the snowfall.	Open excavation taking place above PRHP parking lot.	N/A
110	2018-02-27 6:00	IN Alert 'PM10 Alert': PM10 (52 µg/m3) at Stn 7B/C: North Camp for 2018-02-27 06:00 MST.	in	100%	PM10	Station 7C	No	N/A	No	WSW	As noted above	As noted above	N/A
110	2018-02-27 22:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	No	WSW	As noted above	As noted above	N/A
110	2018-02-27 23:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	No	WSW	As noted above	As noted above	N/A

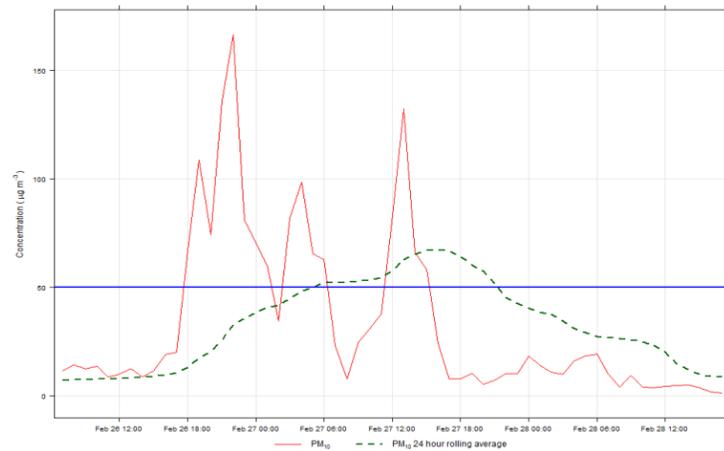


Figure 1: PM<sub>10</sub> Time series plot for the period, February 26, 2018 17:00 - February 27, 2018 17:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

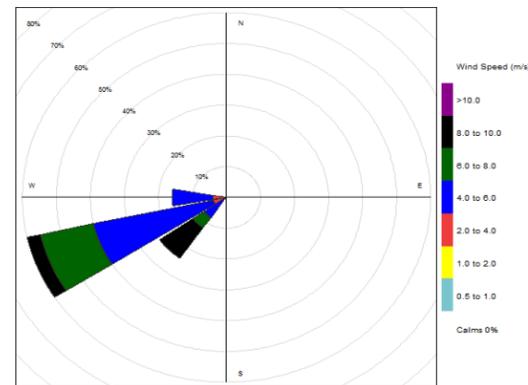


Figure 2: Wind rose during the alert event period, February 26, 2018 17:00 - February 27, 2018 17:00.

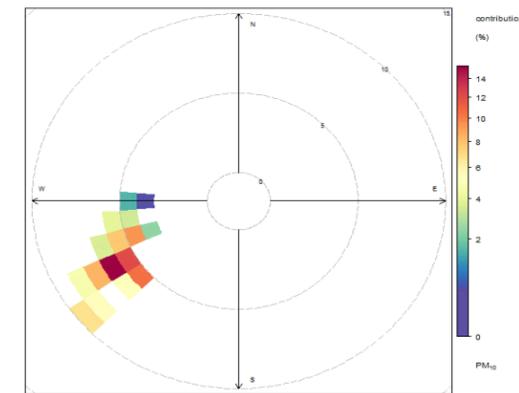


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period February 26, 2018 17:00 - February 27, 2018 17:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Alteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
111	2018-03-01 18:00	IN Alert 'PM10 > 90% Alert': PM10 (45.2 µg/m3) at Stn 7B/C: North Camp for 2018-03-01 18:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	N	<b>PRHP</b> : There was two RWDI air quality notifications for the week of February 25 - March 03, 2018. The first was on February 27th, no mitigation measures were implemented due to daily environmental monitoring observing no issues with air quality. On March 1st there was heavy snowfall and left bank excavation was shut down at 4pm due to the snowfall.	Open excavation taking place above PRHP parking lot.	N/A
111	2018-03-01 21:00	IN Alert 'PM10 Alert': PM10 (50.9 µg/m3) at Stn 7B/C: North Camp for 2018-03-01 21:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	N	As noted above	As noted above	N/A
111	2018-03-02 12:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	N	As noted above	As noted above	N/A
111	2018-03-02 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	N	As noted above	As noted above	N/A

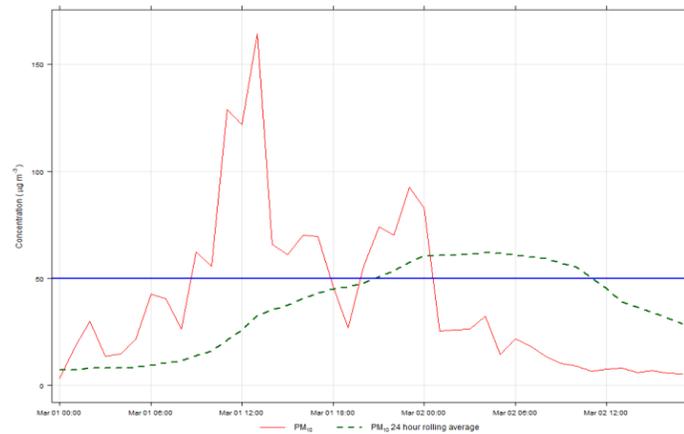


Figure 1: PM<sub>10</sub> Time series plot for the period, March 1, 2018 08:00 - March 2, 2018 02:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

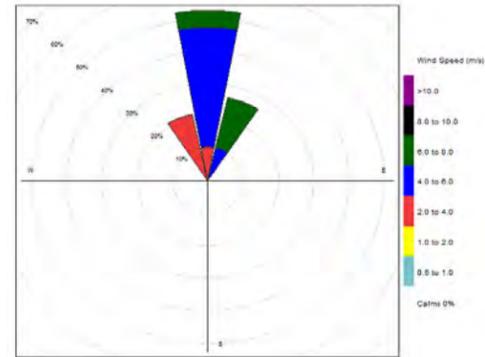


Figure 2: Wind rose during the alert event period, March 1, 2018 08:00 - March 2, 2018 02:00.

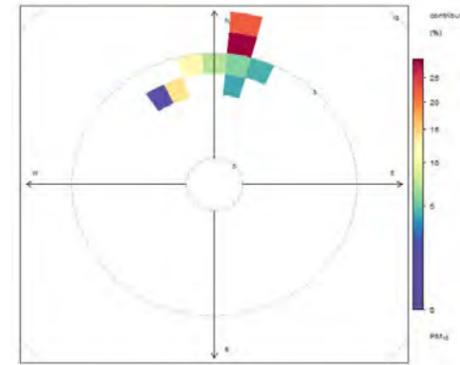


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period March 1, 2018 08:00 - March 2, 2018 02:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Alteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
112	2018-03-12 5:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-03-12 05:00 MST.	in	90%	PM2.5	Station 9	Yes	Sample pump failure	No		N/A	N/A	N/A
112	2018-03-12 9:00	IN Alert 'PM2.5 Alert': PM2.5 (25 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-03-12 09:00 MST.	in	100%	PM2.5	Station 9	Yes	Sample pump failure	No		N/A	N/A	N/A
112	2018-03-12 22:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	Yes	Sample pump failure	No		N/A	N/A	N/A
112	2018-03-13 3:00	IN Alert 'PM2.5 Alert': PM2.5 (25 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-03-13 03:00 MST.	in	100%	PM2.5	Station 9	Yes	Sample pump failure	No		N/A	N/A	N/A
112	2018-03-13 4:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	Yes	Sample pump failure	No		N/A	N/A	N/A
112	2018-03-13 6:00	IN Alert 'PM2.5 Alert': PM2.5 (25.2 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-03-13 06:00 MST.	in	100%	PM2.5	Station 9	Yes	Sample pump failure	No		N/A	N/A	N/A
112	2018-03-15 4:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	No		No	ESE		N/A	N/A
112	2018-03-15 7:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No		No	ESE		N/A	N/A

**PRHP**: One PM air quality alert notification was received for Station 9, Fort St John, 10:10pm on March 14, 2018. PRHP is not currently conducting work in 85th Ave. The air quality was noted to return back to normal at 7:00am on March 15, 2018.

**4EVERGREEN**: No burning occurred during the reporting time period. Dust is not an issue due to frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per EPP and staging areas are located a significant distance (> 1km) from areas sensitive to emissions (e.g. residences, livestock).

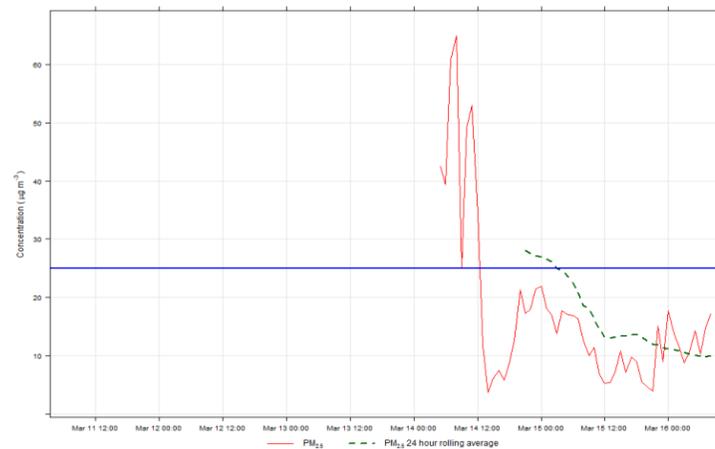


Figure 1: PM<sub>2.5</sub> Time series plot for the period, March 12, 2018 05:00 - March 15, 2018 08:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

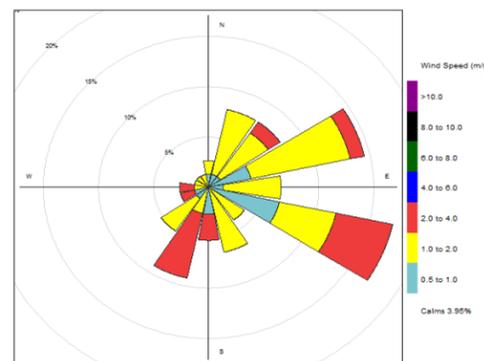


Figure 2: Wind rose during the alert event period, March 12, 2018 05:00 - March 15, 2018 08:00.

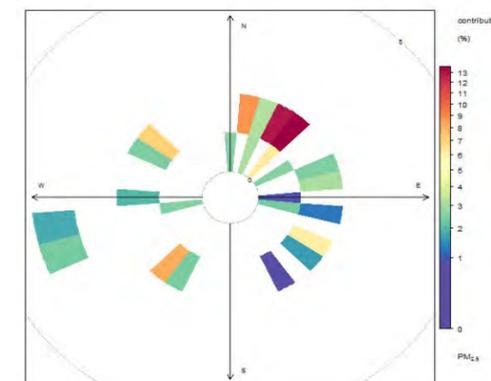


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period March 12, 2018 05:00 - March 15, 2018 08:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Alteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
113	2018-03-14 22:00	IN Alert 'PM10 > 90% Alert': PM10 (46.1 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-03-14 22:00 MST.	in	90%	PM10	Station 9	No	N/A	No	ESE	<b>PRHP</b> : One PM air quality alert notification was received for Station 9, Fort St John, 10:10pm on March 14, 2018. PRHP is not currently conducting work in 85th Ave. The air quality was noted to return back to normal at 7:00am on March 15, 2018.  <b>4EVERGREEN</b> : No burning occurred during the reporting time period. Dust is not an issue due to frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per EPP and staging areas are located a significant distance (> 1km) from areas sensitive to emissions (e.g. residences, livestock).	N/A	N/A
113	2018-03-15 7:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Station 9	No	N/A	No	ESE	As noted above	N/A	N/A

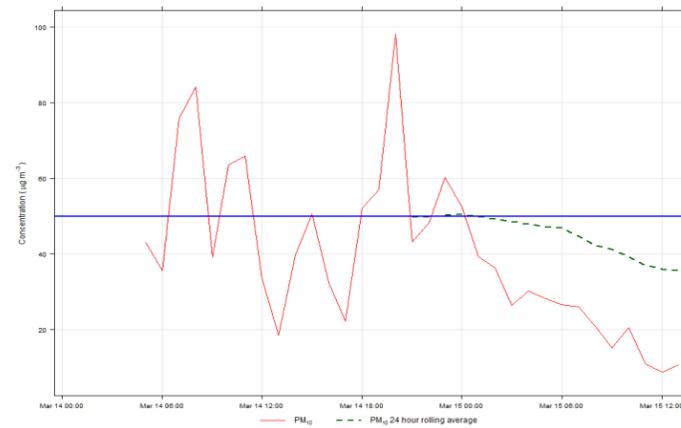


Figure 1: PM<sub>10</sub> Time series plot for the period, March 14, 2018 06:00 - March 15, 2018 03:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

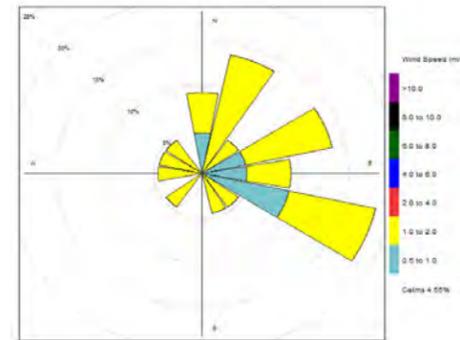


Figure 2: Wind rose during the alert event period, March 14, 2018 06:00 - March 15, 2018 03:00.

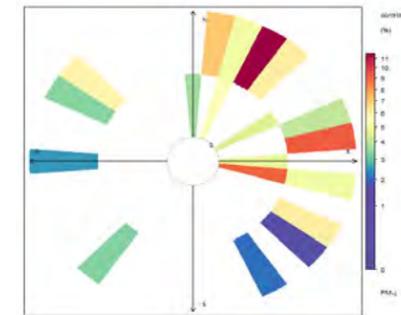


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period March 14, 2018 06:00 - March 15, 2018 03:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
114	2018-03-31 6:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.9 µg/m3) at Stn 7B/C: North Camp for 2018-03-31 06:00 MST	in	90%	PM2.5	Station 7C	No	N/A	No	ENE	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were RWDI alerts on March 31, 2018 at Station 7B/C: North camp at 6:00am and 7:00am. Station 8: Fort St. John Old Fort had an alert on March 31, 2018 at 12:00pm. Smoke due to slash piles burning West of R5a is believed to be the root cause of the alerts. Graders were sent out to mitigate against any suspended dust in these areas.</p> <p><b>4EVERGREEN:</b> The first burning period began on March 28th, 2018 and was completed on April 1st, 2018. 88 piles were assessed for remaining smoke (documented as percentage of area still emitting smoke), burn completion percentage (how much wood remained after burning) and recommendations were made on re-piling and reignition requirements. Piles were previously given identification numbers during the initial wildlife/pile surveys (Date?) and photos were taken prior to burning. Of 88 piles burned, approximately 12 piles potentially required re-piling and re-ignition. All other piles were completely burned with no smoke emitting from the burned area of the pile. A few piles had one or two small areas (30-50 cm in diameter) that were still smoldering after the 96 hr burn period was complete. No piles remained with greater than 5% of the total surface area emitting smoke after the 96 hr burn period and most piles were completely burned within 24 hrs. The Second burning period began on March 30th, 2018 and was completed on April 3rd, 2018. 69 piles were assessed after 96 hrs with most piles appearing to have less than 5% of the total surface area emitting smoke after the 96 hr burn period. Most piles were completely burned within 24 hrs. None of the 69 piles burned during the second burning period required re-piling or re-ignition. Once all of the piles were burned and the second burn period was completed (96 hrs after ignition; commencing March 30th, 2018) the machines flattened the ash piles to expose remaining hot spots and placed snow over the burned surface area to cool them down. Placing snow over the hotspots eliminated all remaining smoke and greatly reduced the chances of spot fires later in the season. All burning took place in compliance with the Site C CEMP, Smoke Management Plan, site specific EPP and was scheduled through utilization of the site-specific venting indexes. Daily Burn Forms have been included in Appendix H along with a post burn photo log of all 140 surveyed piles. Dust was not an issue during this reporting period due to the frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per the EPP. Staging areas were located a significant distance (&gt; 1km) from sensitive receptors (e.g. residences, livestock).</p>	N/A	N/A
114	2018-03-31 7:00	IN Alert 'PM2.5 Alert': PM2.5 (25.3 µg/m3) at Stn 7B/C: North Camp for 2018-03-31 07:00 MST	in	100%	PM2.5	Station 7C	No	N/A	No	ENE	As noted above	N/A	N/A
114	2018-04-01 0:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM2.5	Station 7C	No	N/A	No	N	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were RWDI alerts on March 31, 2018 at Station 7B/C: North camp at 6:00am and 7:00am. Station 8: Fort St. John Old Fort had an alert on March 31, 2018 at 12:00pm. Smoke due to slash piles burning West of R5a is believed to be the root cause of the alerts. Graders were sent out to mitigate against any suspended dust in these areas.</p> <p><b>4EVERGREEN:</b> The first burning period began on March 28th, 2018 and was completed on April 1st, 2018. 88 piles were assessed for remaining smoke (documented as percentage of area still emitting smoke), burn completion percentage (how much wood remained after burning) and recommendations were made on re-piling and reignition requirements. Piles were previously given identification numbers during the initial wildlife/pile surveys (Date?) and photos were taken prior to burning. Of 88 piles burned, approximately 12 piles potentially required re-piling and re-ignition. All other piles were completely burned with no smoke emitting from the burned area of the pile. A few piles had one or two small areas (30-50 cm in diameter) that were still smoldering after the 96 hr burn period was complete. No piles remained with greater than 5% of the total surface area emitting smoke after the 96 hr burn period and most piles were completely burned within 24 hrs. The Second burning period began on March 30th, 2018 and was completed on April 3rd, 2018. 69 piles were assessed after 96 hrs with most piles appearing to have less than 5% of the total surface area emitting smoke after the 96 hr burn period. Most piles were completely burned within 24 hrs. None of the 69 piles burned during the second burning period required re-piling or re-ignition. Once all of the piles were burned and the second burn period was completed (96 hrs after ignition; commencing March 30th, 2018) the machines flattened the ash piles to expose remaining hot spots and placed snow over the burned surface area to cool them down. Placing snow over the hotspots eliminated all remaining smoke and greatly reduced the chances of spot fires later in the season. All burning took place in compliance with the Site C CEMP, Smoke Management Plan, site specific EPP and was scheduled through utilization of the site-specific venting indexes. Daily Burn Forms have been included in Appendix H along with a post burn photo log of all 140 surveyed piles. Dust was not an issue during this reporting period due to the frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per the EPP. Staging areas were located a significant distance (&gt; 1km) from sensitive receptors (e.g. residences, livestock).</p>	N/A	N/A

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
114	2018-04-01 1:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	No	ENE	As noted above	N/A	N/A

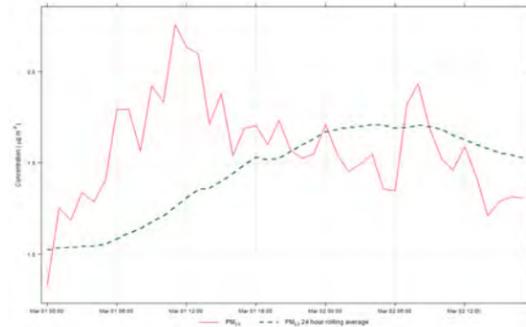


Figure 1: PM<sub>2.5</sub> Time series plot for the period, March 30, 2018 22:00 - March 31, 2018 11:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

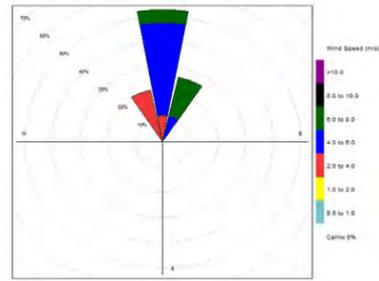


Figure 2: Wind rose during the alert event period, March 30, 2018 22:00 - March 31, 2018 11:00.

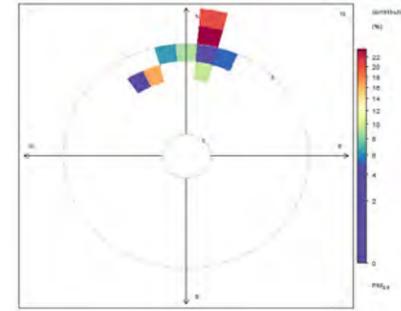


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period March 30, 2018 22:00 - March 31, 2018 11:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	-------------------	--	---------------------------

**PRHP:** For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were RWDI alerts on March 31, 2018 at Station 7B/C: North camp at 6:00am and 7:00am. Station 8: Fort St. John Old Fort had an alert on March 31, 2018 at 12:00pm. Smoke due to slash piles burning West of R5a is believed to be the root cause of the alerts. Graders were sent out to mitigate against any suspended dust in these areas.

**4EVERGREEN:** The first burning period began on March 28th, 2018 and was completed on April 1st, 2018. 88 piles were assessed for remaining smoke (documented as percentage of area still emitting smoke), burn completion percentage (how much wood remained after burning) and recommendations were made on re-piling and re-ignition requirements. Piles were previously given identification numbers during the initial wildlife/pile surveys (Date?) and photos were taken prior to burning. Of 88 piles burned, approximately 12 piles potentially required re-piling and re-ignition. All other piles were completely burned with no smoke emitting from the burned area of the pile. A few piles had one or two small areas (30-50 cm in diameter) that were still smoldering after the 96 hr burn period was complete. No piles remained with greater than 5% of the total surface area emitting smoke after the 96 hr burn period and most piles were completely burned within 24 hrs. The Second burning period began on March 30th, 2018 and was completed on April 3rd, 2018. 69 piles were assessed after 96 hrs with most piles appearing to have less than 5% of the total surface area emitting smoke after the 96 hr burn period. Most piles were completely burned within 24 hrs. None of the 69 piles burned during the second burning period required re-piling or re-ignition. Once all of the piles were burned and the second burn period was completed (96 hrs after ignition; commencing March 30th, 2018) the machines flattened the ash piles to expose remaining hot spots and placed snow over the burned surface area to cool them down. Placing snow over the hotspots eliminated all remaining smoke and greatly reduced the chances of spot fires later in the season. All burning took place in compliance with the Site C CEMP, Smoke Management Plan, site specific EPP and was scheduled through utilization of the site-specific venting indexes. Daily Burn Forms have been included in Appendix H along with a post burn photo log of all 140 surveyed piles. Dust was not an issue during this reporting period due to the frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per the EPP. Staging areas were located a significant distance (> 1km) from sensitive receptors (e.g. residences, livestock).

115	2018-03-31 12:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.1 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-03-31 12:00 MST	in	90%	PM2.5	Station 8	No	N/A	No	SSW		N/A	N/A
-----	------------------	--	----	-----	-------	-----------	----	-----	----	-----	--	-----	-----

115	2018-04-01 1:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM2.5	Station 8	No	N/A	No	SSW	As noted above	N/A	N/A
-----	-----------------	--	-----	-----	-------	-----------	----	-----	----	-----	----------------	-----	-----

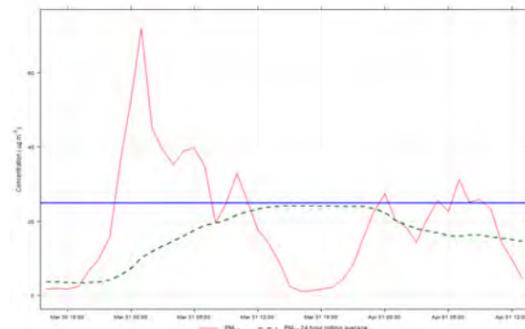


Figure 1: PM<sub>2.5</sub> Time series plot for the period, March 30, 2018 19:00 - March 31, 2018 12:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

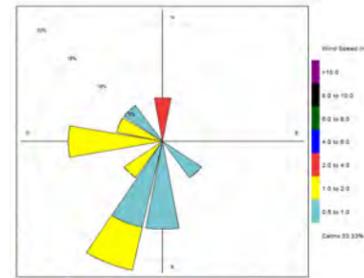


Figure 2: Wind rose during the alert event period, March 30, 2018 19:00 - March 31, 2018 12:00.

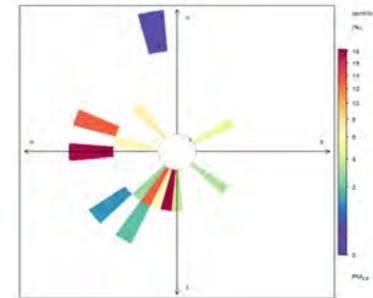


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period March 30, 2018 19:00 - March 31, 2018 12:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
116	2018-04-14 16:00	IN Alert 'PM10 > 90% Alert': PM10 (51.4 µg/m3) at Stn 7B/C: North Camp for 2018-04-14 16:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	SW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. Two Air Quality alerts were received on April 14, 2018 for Stn 7B. Graders were sent out to mitigate against any suspended dust in these areas.</p> <p><b>4EVERGREEN</b>: No works took place during this reporting period resulting in no requirements for management of air quality or development of air quality concerns. Dust is not an issue due to frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per the EPP and staging areas were located a significant distance (&gt; 1km) from areas sensitive to emissions (e.g. residences, livestock).</p> <p><b>AFDE</b>: Site covered in snow to start week. Generally wet conditions. Equipment in good working conditions with mufflers installed.</p>	Chintan Trivedi went to the Site-C view point on 2018-04-15 around 15:00 and noted that Site-C excavation bank in the SW was dry, especially the haul-road. There were several trucks hauling excavated soil and dust was observed being stirred up at to their passage.	N/A
116	2018-04-14 16:00	IN Alert 'PM10 Alert': PM10 (51.4 µg/m3) at Stn 7B/C: North Camp for 2018-04-14 16:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	SW	As noted above	As noted above	N/A
116	2018-04-15 15:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	100%	PM10	Station 7C	No	N/A	Yes	SW	As noted above	As noted above	N/A
116	2018-04-16 16:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	Yes	SW	As noted above	As noted above	N/A

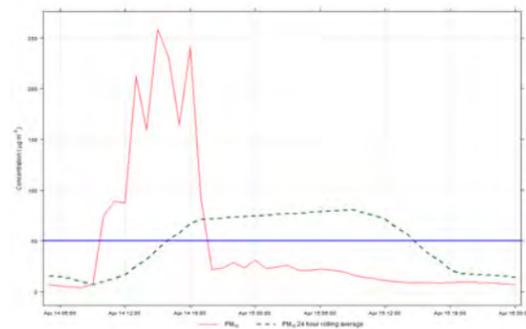


Figure 1: PM<sub>10</sub> Time series plot for the period, April 14, 2018 09:00 - 20:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

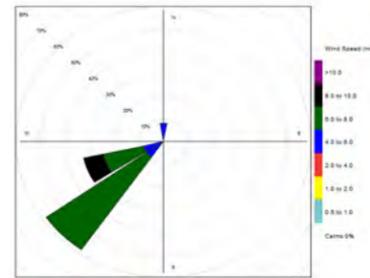


Figure 2: Wind rose during the alert event period, April 14, 2018 09:00 - 20:00, 2018.

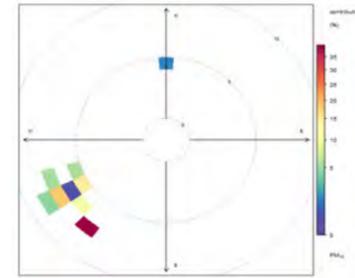


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period April 14, 2018 09:00 - 20:00, 2018.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
117	2018-04-20 12:00	IN Alert 'PM10 > 90% Alert': PM10 (49.2 µg/m3) at Stn 7B/C: North Camp for 2018-04-20 12:00 MST	in	90%	PM10	Station 7C	No	N/A	Yes	SW	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two air quality alerts on April 20, 2018. Graders were sent out to mitigate against any suspended dust in these areas.  <b>4EVERGREEN:</b> No works took place during this reporting period resulting in no requirements for management of air quality or development of air quality concerns. Dust is not an issue due to frozen ground conditions and snow cover. The no-idling policy was followed to reduce emissions with exceptions as per the EPP and staging areas were located a significant distance (> 1km) from areas sensitive to emissions (e.g. residences, livestock).	The dominant wind direction during this event was SW (the direction of Site-C excavation bank) with wind speeds up to 8 m/s.	N/A
117	2018-04-20 13:00	IN Alert 'PM10 Alert': PM10 (58.2 µg/m3) at Stn 7B/C: North Camp for 2018-04-20 13:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	SW	As noted above	As noted above	N/A
117	2018-04-22 4:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	SW	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were 3 RWDI Air Quality alerts for the week of April 22 - 28, 2018. Graders were sent out to mitigate against any suspended dust in these areas. <b>AFDE:</b> Site generally wet to start the week, becoming increasingly dry and dusty as the week progressed. As conditions dried, dust from heavy equipment use was suppressed by spraying water on haul routes from a water tanker. Water was sourced from town with no extraction from the Peace River. Dust suppression activities occurred on April 22, 23, 24, 25, 26, 27 & 28, 2018 with tanker load numbers adjusted as needed each day. Equipment in good working condition with mufflers installed.  <b>4EVERGREEN:</b> The previous burn period on the lower reservoir was completed during the March 30th – April 3rd, 2018 reporting period within the mainland LRCR area. Smoke was seen coming out of pile 076 within this mainland section on April 25th, 2018. 4EG was notified and labourers arrived to put out the fire. By the evening of April 25th, the fire had grown from an approximate 10x15 m area to a 20x100 m area. An additional six hotspots were identified that evening coming out of piles 42, 50, 67, 88, 98 and 111. The helicopter arrived April 26th, 2018 around 13:30 to extinguish the mainland hot spots using a bambi bucket. Water was picked up from the Peace River and dumped on hotspots until extinguished. Additional thermal scanning was requested by BC Hydro prior to the summer fire season, to ensure that all hotspots were completely extinguished on both Tea Island and in the lower reservoir. A new burn period began for Tea Island starting on April 27th, 2018 and continuing for 96hrs until May 1st, 2018. On April 27th, 2018 two test piles were ignited at 8:48am. By 9:10am both test piles were ignited and completely engulfed at this time BCH called to activate the Helicopter for further ignition of piles. The fires began to creep from the ignited wood piles and spot fires were started by hot ash falling onto the dry wood debris covering the island. 4EG and BC Hydro crews present on site began fire control measures including extinguishing hotspots and digging a small fire guard by hand to reinforce the Merlin buffer. The helicopter arrived on site and began lighting piles closest to the merlin buffer and working to the west (towards the upstream side of the island). 4EG crews, BC Hydro and DWB staff remained within the merlin buffer zone while the helicopter was lighting piles with the drip torch. The helicopter lit 55 piles in under 45 minutes and once all piles were lit flew back to the hanger to disconnect the drip torch. 4EG labour crews and BC Hydro members immediately began assessing the island for creeping and spot fires that may threaten the RVMA treeline. Most hot spots were put out using portable water packs, shovels and fire axes. At around 13:30 the helicopter was called back to assist in controlling spot fires along the south side of the island using a bambi bucket. Dust has not been an issue yet, but as roads dry out dust may become an issue. 4EG will spray access roads down with water for dust suppression and any workers outside during dusty conditions are required to wear a dust mask to protect from silica exposure. The no-idling policy was followed to reduce emissions with exceptions as per EPP and staging areas are located a significant distance (> 1km) from areas sensitive to emissions (e.g. residences, livestock).	As noted above	N/A
117	2018-04-22 12:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	SW	As noted above	As noted above	N/A

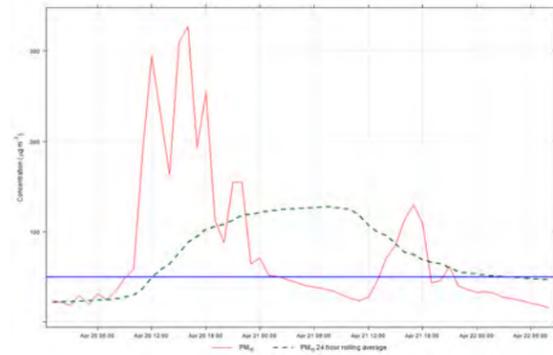


Figure 1: PM<sub>10</sub> Time series plot for the period, April 20, 2018 07:00 - April 21, 2018 22:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

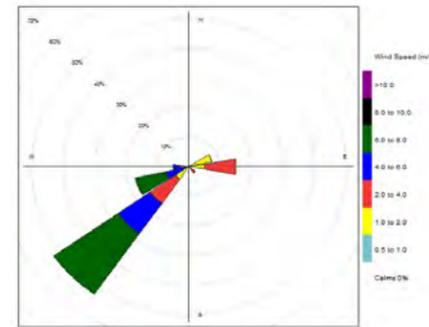


Figure 2: Wind rose during the alert event period, April 20, 2018 07:00 - April 21, 2018 22:00.

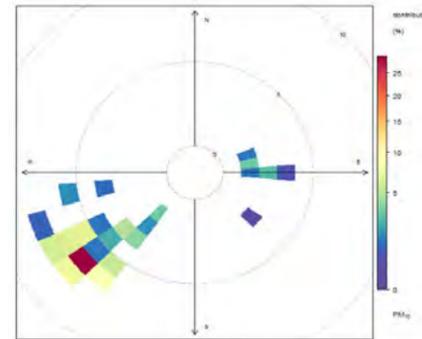


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period April 20, 2018 07:00 - April 21, 2018 22:00.

[1] Site Response provided by contractor, scope of contract as follows:  
**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	-------------------	--	---------------------------

**PRHP**: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were 3 RWDI Air Quality alerts for the week of April 22 - 28, 2018. Graders were sent out to mitigate against any suspended dust in these areas.

**AFDE**: Site generally wet to start the week, becoming increasingly dry and dusty as the week progressed. As conditions dried, dust from heavy equipment use was suppressed by spraying water on haul routes from a water tanker. Water was sourced from town with no extraction from the Peace River. Dust suppression activities occurred on April 22, 23, 24, 25, 26, 27 & 28, 2018 with tanker load numbers adjusted as needed each day.

**4EVERGREEN**: The previous burn period on the lower reservoir was completed during the March 30th – April 3rd, 2018 reporting period within the mainland LRCR area. Smoke was seen coming out of pile 076 within this mainland section on April 25th, 2018. 4EG was notified and labourers arrived to put out the fire. By the evening of April 25th, the fire had grown from an approximate 10x15 m area to a 20x100 m area. An additional six hotspots were identified that evening coming out of piles 42, 50, 67, 88, 98 and 111. The helicopter arrived April 26th, 2018 around 13:30 to extinguish the mainland hot spots using a bambi bucket. Water was picked up from the Peace River and dumped on hotspots until extinguished. Additional thermal scanning was requested by BC Hydro prior to the summer fire season, to ensure that all hotspots were completely extinguished on both Tea Island and in the lower reservoir. A new burn period began for Tea Island starting on April 27th, 2018 and continuing for 96hrs until May 1st, 2018. On April 27th, 2018 two test piles were ignited at 8:48am. By 9:10am both test piles were ignited and completely engulfed at this time BCH called to activate the Helicopter for further ignition of piles. The fires began to creep from the ignited wood piles and spot fires were started by hot ash falling onto the dry wood debris covering the island. 4EG and BC Hydro crews present on site began fire control measures including extinguishing hotspots and digging a small fire guard by hand to reinforce the Merlin buffer. The helicopter arrived on site and began lighting piles closest to the merlin buffer and working to the west (towards the upstream side of the island). 4EG crews, BC Hydro and DWB staff remained within the merlin buffer zone while the helicopter was lighting piles with the drip torch. The helicopter lit 55 piles in under 45 minutes and once all piles were lit flew back to the hanger to disconnect the drip torch. 4EG labour crews and BC Hydro members immediately began assessing the island for creeping and spot fires that may threaten the RVMA treeline. Most hot spots were put out using portable water packs, shovels and fire axes. At around 13:30 the helicopter was called back to assist in controlling spot fires along the south side of the island using a bambi bucket. Dust has not been an issue yet, but as roads dry out dust may become an issue. 4EG will spray access roads down with water for dust suppression and any workers outside during dusty conditions are required to wear a dust mask to protect from silica exposure. The no-idling policy was followed to reduce emissions with exceptions as per EPP and staging areas are located a significant distance (> 1km) from areas sensitive to emissions (e.g. residences, livestock). • Equipment in good working condition with mufflers installed.

118	2018-04-22 18:00	IN Alert 'PM10 > 90% Alert': PM10 (47.4 µg/m3) at Stn 7B/C: North Camp for 2018-04-22 18:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW		The dominant wind direction during this event was WSW (close to the direction of Site-C excavation bank) with wind speeds up to 8 m/s.	N/A
118	2018-04-22 2:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 7B/C: North Camp for 2018-04-23 02:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	The dominant wind direction during this event was WSW (close to the direction of Site-C excavation bank) with wind speeds up to 8 m/s.	N/A
118	2018-04-27 8:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	N/A	The Ministry of Environment and Climate Change Strategy in collaboration with Northern Health issued advisory for Ft. St. John on April 23, 2018. The Dust Advisory remains in effect due to continued high concentrations of particulate matter (PM10). The Advisory ended on April 29, 2018
118	2018-04-27 19:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 7B/C: North Camp for 2018-04-27 19:00 MST	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	N/A	As noted above
118	2018-04-28 13:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	N/A	As noted above
118	2018-04-28 18:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	N/A	As noted above

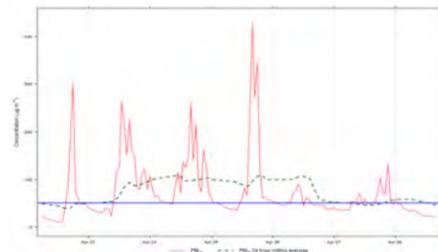


Figure 1: PM10 Time series plot for the period, April 22, 2018 12:00 - April 28, 2018 01:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m3

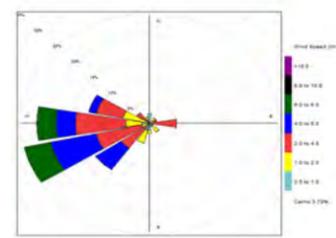


Figure 2: Wind rose during the alert event period, April 22, 2018

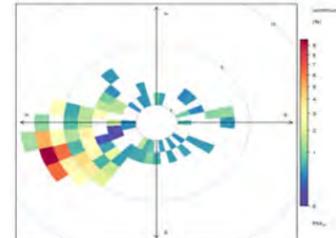


Figure 3: Polar frequency plot for PM10 during the alert event period April 22, 2018 12:00 - April 28, 2018 01:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
119	2018-04-28 5:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.3 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-04-28 05:00 MST	in	90%	PM2.5	Station 8	No	N/A	No	W	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were 3 RWDI Air Quality alerts for the week of April 22 - 28, 2018. The 24-hour rolling average of PM10 concentrations has exceeded and remains greater than the BC 24-hour air quality objective of 50 µg/m3. Graders were sent out to mitigate against any suspended dust in these areas.</p> <p><b>4EVERGREEN:</b> The previous burn within the mainland LRCR area on the lower reservoir was completed during the March 30th – April 3rd, 2018, reporting period. Hotspots were observed throughout the week on the mainland (LRCR) side of the lower reservoir clearing works while travelling to Tea Island in the jetboat. 4EG staff accessed the fires by UTV and extinguished using pumps, shovels and fire axes. Most hot spots and spot fires were caught quickly and extinguished before they could spread away from the burnt pile locations. On May 2nd, 2018, a small spot fire was noted by Mapleleaf staff. By the time workers could mobilize, the fire had reached the RVMA treeline west of the pipeline crossing and began spreading to the east. Helicopters and the BC Wildfire Service (BCWS) were called in to take control of the fire before it could spread any further. Two helicopters arrived in the afternoon of May 2nd, 2018 around 13:30 to extinguish the mainland fire using bambi buckets. Water was picked up from the Peace River and dumped on hotspots until extinguished. Fire guards were established around the fire using bulldozers and wet lines with crews actively fighting the fire inside the fire guard with pumps, shovels and fire axes. BCWS crews took control of the fire on the mainland portion of the lower reservoir (LRCR) to prevent the fire from spreading uphill to the adjacent treeline. The fire was contained by May 4th, 2018 but BCWS remains in control of the area until mop up duties are complete. A new burn period began for Tea Island starting on April 27th, 2018 which continued for 96 hrs (ending May 1st, 2018). From April 28th to May 4th, 2018 4EG crews continued to put out identified hotspots using pumps, shovels and fire axes. The previous burn within the mainland LRCR area on the lower reservoir was completed during the March 30th – April 3rd, 2018, reporting period. Hotspots were observed throughout the week on the mainland (LRCR) side of the lower reservoir clearing works while travelling to Tea Island in the jetboat. 4EG staff accessed the fires by UTV and extinguished using pumps, shovels and fire axes. Most hot spots and spot fires were caught quickly and extinguished before they could spread away from the burnt pile locations. On May 2nd, 2018, a small spot fire was noted by Mapleleaf staff. By the time workers could mobilize, the fire had reached the RVMA treeline west of the pipeline crossing and began spreading to the east. Helicopters and the BC Wildfire Service (BCWS) were called in to take control of the fire before it could spread any further. Two helicopters arrived in the afternoon of May 2nd, 2018 around 13:30 to extinguish the mainland fire using bambi buckets. Water was picked up from the Peace River and dumped on hotspots until extinguished. Fire guards were established around the fire using bulldozers and wet lines with crews actively fighting the fire inside the fire guard with pumps, shovels and fire axes. BCWS crews took control of the fire on the mainland portion of the lower reservoir (LRCR) to prevent the fire from spreading uphill to the adjacent treeline. The fire was contained by May 4th, 2018 but BCWS remains in control of the area until mop up duties are complete. A new burn period began for Tea Island starting on April 27th, 2018 which continued for 96 hrs (ending May 1st, 2018). From April 28th to May 4th, 2018 4EG crews continued to put out identified hotspots using pumps, shovels and fire axes.</p>	The dominant wind direction during this event was W (the direction of Site-C construction area) with wind speeds up to 4 m/s.	The Ministry of Environment and Climate Change Strategy in collaboration with Northern Health issued for Ft. St. John on April 23, 2018. The Dust Advisory remains in effect due to continued high concentrations of particulate matter (PM10). The Advisory ended on April 29, 2018. NOTE: PM2.5 is a subset of PM10
119	2018-04-28 6:00	.5 µg/m3) at Stn 8: Fort St. John Old	in	100%	PM2.5	Station 8	No	N/A	No	W	As noted above	As noted above	As noted above
119	2018-04-29 0:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM2.5	Station 8	No	N/A	No	W	As noted above	As noted above	As noted above
119	2018-04-29 3:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM2.5	Station 8	No	N/A	No	W	As noted above	As noted above	As noted above

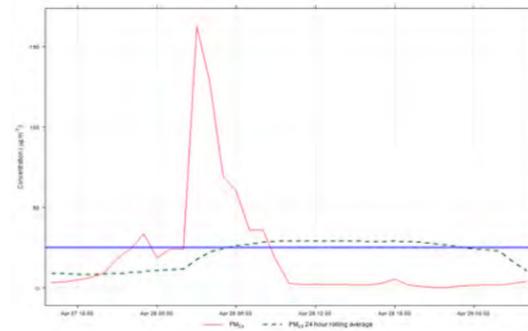


Figure 1: PM<sub>2.5</sub> Time series plot for the period, April 27, 2018 20:00 - April 28, 2018 10:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

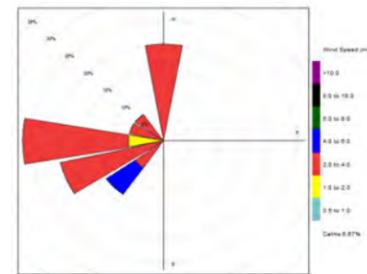


Figure 2: Wind rose during the alert event period, April 27, 2018 20:00 - April 28, 2018 10:00.

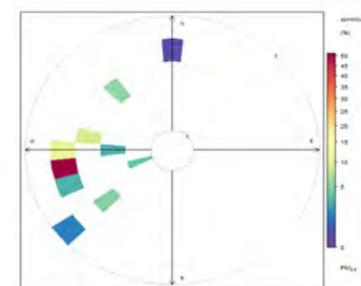


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period April 27, 2018 20:00 - April 28, 2018 10:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
120	2018-04-28 6:00	IN Alert 'PM10 > 90% Alert': PM10 (47.6 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-04-28 06:00 MST.	in	90%	PM10	Station 8	No	N/A	No	W	PRHP: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were 3 RWDI Air Quality alerts for the week of April 22 - 28, 2018. Graders were sent out to mitigate against any suspended dust in these areas.  4EVERGREEN: The previous burn within the mainland LRCR area on the lower reservoir was completed during the March 30th – April 3rd, 2018, reporting period. Hotspots were observed throughout the week on the mainland (LRCR) side of the lower reservoir clearing works while travelling to Tea Island in the jetboat. 4EG staff accessed the fires by UTV and extinguished using pumps, shovels and fire axes. Most hot spots and spot fires were caught quickly and extinguished before they could spread away from the burnt pile locations. On May 2nd, 2018, a small spot fire was noted by Mapleleaf staff. By the time workers could mobilize, the fire had reached the RVMA treeline west of the pipeline crossing and began spreading to the east. Helicopters and the BC Wildfire Service (BCWS) were called in to take control of the fire before it could spread any further. Two helicopters arrived in the afternoon of May 2nd, 2018 around 13:30 to extinguish the mainland fire using bambi buckets. Water was picked up from the Peace River and dumped on hotspots until extinguished. Fire guards were established around the fire using bulldozers and wet lines with crews actively fighting the fire inside the fire guard with pumps, shovels and fire axes. BCWS crews took control of the fire on the mainland portion of the lower reservoir (LRCR) to prevent the fire from spreading uphill to the adjacent treeline. The fire was contained by May 4th, 2018 but BCWS remains in control of the area until mop up duties are complete. A new burn period began for Tea Island starting on April 27th, 2018 which continued for 96 hrs (ending May 1st, 2018). From April 28th to May 4th, 2018 4EG crews continued to put out identified hotspots using pumps, shovels and fire axes. The previous burn within the mainland LRCR area on the lower reservoir was completed during the March 30th – April 3rd, 2018, reporting period. Hotspots were observed throughout the week on the mainland (LRCR) side of the lower reservoir clearing works while travelling to Tea Island in the jetboat. 4EG staff accessed the fires by UTV and extinguished using pumps, shovels and fire axes. Most hot spots and spot fires were caught quickly and extinguished before they could spread away from the burnt pile locations. On May 2nd, 2018, a small spot fire was noted by Mapleleaf staff. By the time workers could mobilize, the fire had reached the RVMA treeline west of the pipeline crossing and began spreading to the east. Helicopters and the BC Wildfire Service (BCWS) were called in to take control of the fire before it could spread any further. Two helicopters arrived in the afternoon of May 2nd, 2018 around 13:30 to extinguish the mainland fire using bambi buckets. Water was picked up from the Peace River and dumped on hotspots until extinguished. Fire guards were established around the fire using bulldozers and wet lines with crews actively fighting the fire inside the fire guard with pumps, shovels and fire axes. BCWS crews took control of the fire on the mainland portion of the lower reservoir (LRCR) to prevent the fire from spreading uphill to the adjacent treeline. The fire was contained by May 4th, 2018 but BCWS remains in control of the area until mop up duties are complete. A new burn period began for Tea Island starting on April 27th, 2018 which continued for 96 hrs (ending May 1st, 2018). From April 28th to May 4th, 2018 4EG crews continued to put out identified hotspots using pumps, shovels and fire axes.	N/A	The Ministry of Environment and Climate Change Strategy in collaboration with Northern Health issued St. John on April 23, 2018. The Dust Advisory remains in effect due to continued high concentrations of particulate matter (PM10). The Advisory ended on April 29, 2018
120	2018-04-28 8:00	IN Alert 'PM10 Alert': PM10 (50.3 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-04-28 08:00 MST.	in	100%	PM10	Station 8	No	N/A	No	W	As noted above	N/A	As noted above
120	2018-04-28 12:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	No	N/A	No	W	As noted above	N/A	As noted above
120	2018-04-28 19:00	IN Alert 'PM10 Alert': PM10 (50.2 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-04-28 19:00 MST.	in	100%	PM10	Station 8	No	N/A	No	W	As noted above	N/A	As noted above
120	2018-04-28 20:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	No	N/A	No	W	As noted above	N/A	As noted above
120	2018-04-28 23:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM10	Station 8	No	N/A	No	W	As noted above	N/A	As noted above

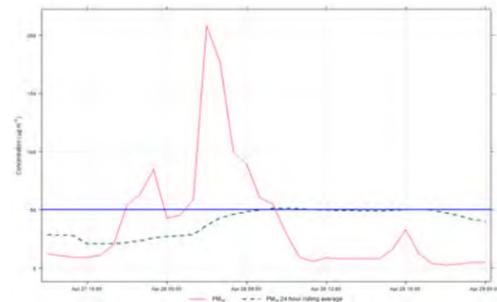


Figure 1: PM<sub>10</sub> Time series plot for the period, April 27, 2018 19:00 - April 28, 2018 10:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

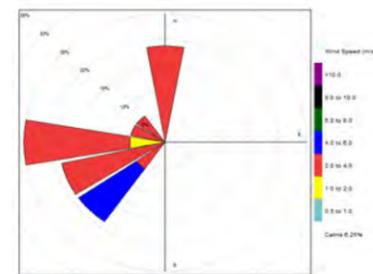


Figure 2: Wind rose during the alert event period, April 27, 2018 19:00 - April 28, 2018 10:00.

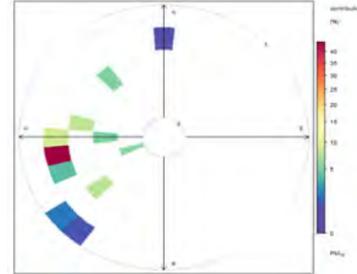


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period April 27, 2018 19:00 - April 28, 2018 10:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
121	2018-05-02 11:00	IN Alert 'PM10 > 90% Alert': PM10 (59.6 µg/m3) at Stn 7B/C: North Camp for 2018-05-02 11:00 MST	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. Graders were sent out to mitigate against any suspended dust in these areas.</p> <p><b>AFDE:</b> Sites dry and dusty throughout the week. Windy conditions contributed to dust generation and blowing soil materials. Dust from heavy equipment use and windy conditions was suppressed by spraying water on haul routes from a water tanker. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were thus recorded by PRHP. Dust suppression activities occurred on all days within this reporting period, with tanker load numbers and locations adjusted as needed each day. • Equipment in good working condition with mufflers installed.</p> <p><b>4EVERGREEN:</b> The previous burn within the mainland LRRCR area on the lower reservoir was completed during the March 30th – April 3rd, 2018, reporting period. Hotspots were observed throughout the week on the mainland (LRRCR) side of the lower reservoir clearing works while travelling to Tea Island in the jetboat. 4EG staff accessed the fires by UTV and extinguished using pumps, shovels and fire axes. Most hot spots and spot fires were caught quickly and extinguished before they could spread away from the burnt pile locations. On May 2nd, 2018, a small spot fire was noted by Mapleleaf staff. By the time workers could mobilize, the fire had reached the RVMA treeline west of the pipeline crossing and began spreading to the east. Helicopters and the BC Wildfire Service (BCWS) were called in to take control of the fire before it could spread any further. Two helicopters arrived in the afternoon of May 2nd, 2018 around 13:30 to extinguish the mainland fire using bambi buckets. Water was picked up from the Peace River and dumped on hotspots until extinguished. Fire guards were established around the fire using bulldozers and wet lines with crews actively fighting the fire inside the fire guard with pumps, shovels and fire axes. BCWS crews took control of the fire on the mainland portion of the lower reservoir (LRRCR) to prevent the fire from spreading uphill to the adjacent treeline. The fire was contained by May 4th, 2018 but BCWS remains in control of the area until mop up duties are complete. A new burn period began for Tea Island starting on April 27th, 2018 which continued for 96 hrs (ending May 1st, 2018). From April 28th to May 4th, 2018 4EG crews continued to put out identified hotspots using pumps, shovels and fire axes. The previous burn within the mainland LRRCR area on the lower reservoir was completed during the March 30th – April 3rd, 2018, reporting period. Hotspots were observed throughout the week on the mainland (LRRCR) side of the lower reservoir clearing works while travelling to Tea Island in the jetboat. 4EG staff accessed the fires by UTV and extinguished using pumps, shovels and fire axes. Most hot spots and spot fires were caught quickly and extinguished before they could spread away from the burnt pile locations. On May 2nd, 2018, a small spot fire was noted by Mapleleaf staff. By the time workers could mobilize, the fire had reached the RVMA treeline west of the pipeline crossing and began spreading to the east. Helicopters and the BC Wildfire Service (BCWS) were called in to take control of the fire before it could spread any further. Two helicopters arrived in the afternoon of May 2nd, 2018 around 13:30 to extinguish the mainland fire using bambi buckets. Water was picked up from the Peace River and dumped on hotspots until extinguished. Fire guards were established around the fire using bulldozers and wet lines with crews actively fighting the fire inside the fire guard with pumps, shovels and fire axes. BCWS crews took control of the fire on the mainland portion of the lower reservoir (LRRCR) to prevent the fire from spreading uphill to the adjacent treeline. The fire was contained by May 4th, 2018 but BCWS remains in control of the area until mop up duties are complete. A new burn period began for Tea Island starting on April 27th, 2018 which continued for 96 hrs (ending May 1st, 2018). From April 28th to May 4th, 2018 4EG crews continued to put out identified hotspots using pumps, shovels and fire axes.</p>	The dominant wind direction during this event was SW (the direction of Site-C excavation bank) with wind speeds up to 10 m/s.	The Ministry of Environment and Climate Change Strategy in collaboration with Northern Health has issued an Air Quality Advisory for Fort St. John on May 02, 2018. The Dust Advisory remained in effect due to continued high concentrations of particulate matter (PM10). The Advisory ended on May 03, 2018. Also, there was brush fire in Site C construction zone on May 02, 2018
121	2018-05-02 11:00	IN Alert 'PM10 Alert': PM10 (59.6 µg/m3) at Stn 7B/C: North Camp for 2018-05-02 11:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
121	2018-05-04 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

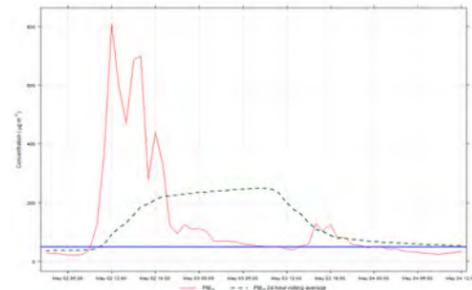


Figure 1: PM<sub>10</sub> Time series plot for the period, May 2, 2018 07:00 - May 4, 2018 06:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

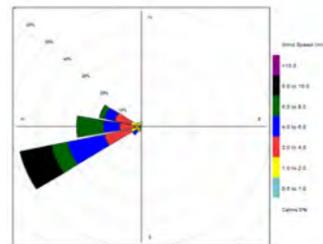


Figure 2: Wind rose during the alert event period, May 2, 2018 07:00 - May 4, 2018 06:00.

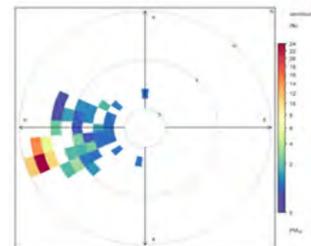


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period May 2, 2018 07:00 - May 4, 2018 06:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
123	2018-05-11 18:00	IN Alert 'PM10 > 90% Alert': PM10 (51 µg/m3) at Stn 7B/C: North Camp for 2018-05-11 18:00 MST	in	90%	PM10	Station 7C	No	N/A	Yes	WNW	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notification for the week May 06 - 12, 2018. Graders and water trucks were sent out to mitigate against any suspended dust in these areas. On May 13 Calcium Chloride was applied to the roads for dust suppression. See below map for application areas.  <b>AFDE:</b> Sites dry and dusty throughout the week. Windy conditions contributed to dust generation. Water tanker utilized for dust suppression on haul/access routes. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extractions volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Dust suppression activities occurred on all days within this reporting period, with tanker load numbers and locations adjusted as needed each day. • Equipment in good working condition with mufflers installed.  <b>4EVERGREEN:</b> Air quality issues due to smoke are no longer an issue in the area, as fire mop-up is complete. As no works were taking place on site during this reporting period no dust management concerns were applicable.	The dominant wind direction during this event was WNW with wind speeds up to 10 m/s. The weather conditions were hot and dry, which is a favourable condition for dust particles to get easily picked up on days with wind speeds up to 10 m/s. The polar frequency plot shows the highest concentration of PM10 came from SW (the direction of Site-C construction area).	N/A
123	2018-05-11 18:00	IN Alert 'PM10 Alert': PM10 (51 µg/m3) at Stn 7B/C: North Camp for 2018-05-11 18:00 MST	in	100%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A
123	2018-05-13 2:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A
123	2018-05-13 5:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A
123	2018-05-14 14:00	IN Alert 'PM10 > 90% Alert': PM10 (73.2 µg/m3) at Stn 7B/C: North Camp for 2018-05-14 14:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A
123	2018-05-14 14:00	IN Alert 'PM10 Alert': PM10 (73.2 µg/m3) at Stn 7B/C: North Camp for 2018-05-14 14:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A
123	2018-05-15 17:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A
123	2018-05-15 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	N/A

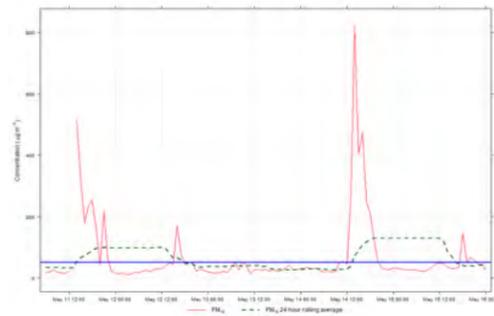


Figure 1: PM<sub>10</sub> Time series plot for the period, May 11, 2018 12:00 - May 15, 2018 18:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

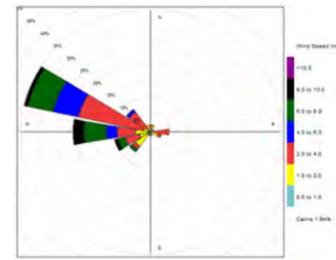


Figure 2: Wind rose during the alert event period, May 11, 2018 12:00 - May 15, 2018 18:00.

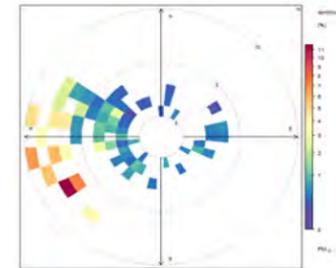


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period May 11, 2018 12:00 - May 15, 2018 18:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
124	2018-05-20 6:00	IN Alert 'PM10 > 90% Alert': PM10 (45.5 µg/m3) at Stn 7B/C: North Camp for 2018-05-20 06:00 MST	in	90%	PM10	Station 7C	NO	N/A	Yes	SW	<b>PRHP</b> : Graders and water trucks were sent out to mitigate against any suspended dust in these areas.  <b>AFDE</b> : Sites dry and dusty throughout the week. Windy conditions contributed to dust generation. Water tanker utilized for dust suppression on haul/access routes. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extractions volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Dust suppression activities occurred on all days within this reporting period, with tanker load numbers and locations adjusted as needed each day. Equipment in good working condition with mufflers installed.  <b>4EVERGREEN</b> : Air quality issues due to smoke are no longer an issue in the area, as fire mop-up is complete.	The dominant wind direction during this event was SW (the direction of Site-C excavation bank) with wind speeds up to 6 m/s.	N/A
124	2018-05-20 9:00	IN Alert 'PM10 Alert': PM10 (50.2 µg/m3) at Stn 7B/C: North Camp for 2018-05-20 09:00 MST.	in	100%	PM10	Station 7C	NO	N/A	Yes	SW	As noted above	As noted above	N/A
124	2018-05-23 13:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	NO	N/A	Yes	SW	As noted above	As noted above	N/A
124	2018-05-23 16:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	Yes	SW	As noted above	As noted above	N/A

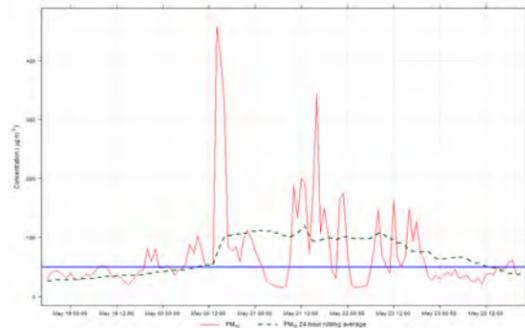


Figure 1: PM<sub>10</sub> Time series plot for the period, May 20, 2018 06:00 - May 22, 2018 21:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

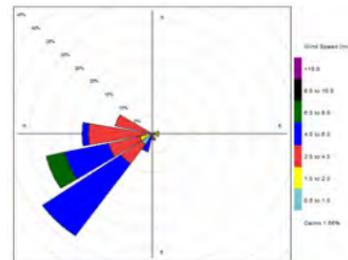


Figure 2: Wind rose during the alert event period, May 20, 2018 06:00 - May 22, 2018 21:00.

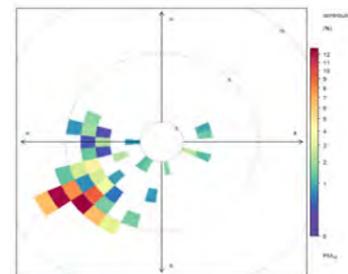


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period May 20, 2018 06:00 - May 22, 2018 21:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
											<b>PRHP</b> : Graders and water trucks were sent out to mitigate against any suspended dust in these areas.		
											<b>4EVERGREEN</b> : Air quality issues due to smoke are no longer an issue in the area, as fire mop-up is complete.		
											<b>AFDE</b> : Sites dry and dusty throughout the week. Windy conditions contributed to dust generation. Water tanker utilized for dust suppression on haul/access routes. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extractions volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Dust suppression activities occurred on all days within this reporting period, with tanker load numbers and locations adjusted as needed each day. • Equipment in good working condition with mufflers installed.	The dominant wind direction during this event was WSW (very close to the direction of Site-C excavation bank) with wind speeds greater than 10 m/s.	N/A
125	2018-05-24 12:00	IN Alert 'PM10 > 90% Alert': PM10 (45.1 µg/m3) at Stn 7B/C: North Camp for 2018-05-24 12:00 MST.	in	90%	PM10	Station 7C	N	N/A	Y	WSW			
125	2018-05-24 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-24 16:00	IN Alert 'PM10 > 90% Alert': PM10 (45.4 µg/m3) at Stn 7B/C: North Camp for 2018-05-24 16:00 MST.	in	90%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-24 17:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-24 18:00	IN Alert 'PM10 > 90% Alert': PM10 (47.8 µg/m3) at Stn 7B/C: North Camp for 2018-05-24 18:00 MST.	in	90%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-24 21:00	IN Alert 'PM10 Alert': PM10 (50.4 µg/m3) at Stn 7B/C: North Camp for 2018-05-24 21:00 MST.	in	100%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-24 23:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	100%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-25 2:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 7B/C: North Camp for 2018-05-25 02:00 MST.	in	100%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-25 7:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	N	N/A	Y	WSW	As noted above	As noted above	N/A
125	2018-05-25 9:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
125	2018-05-25 14:00	IN Alert 'PM10 > 90% Alert': PM10 (48.3 µg/m3) at Stn 7B/C: North Camp for 2018-05-25 14:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
125	2018-05-25 15:00	IN Alert 'PM10 Alert': PM10 (53.6 µg/m3) at Stn 7B/C: North Camp for 2018-05-25 15:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
125	2018-05-29 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
125	2018-05-29 18:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A

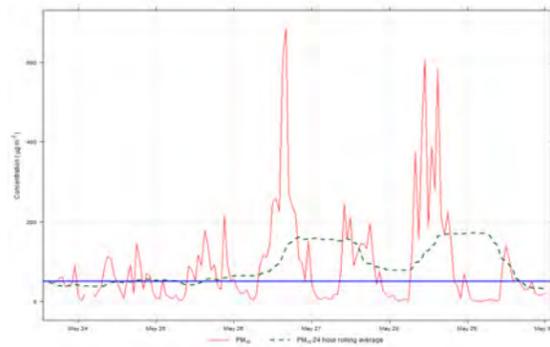


Figure 1: PM<sub>10</sub> Time series plot for the period, May 24, 2018 07:00 - May 29, 2018 18:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

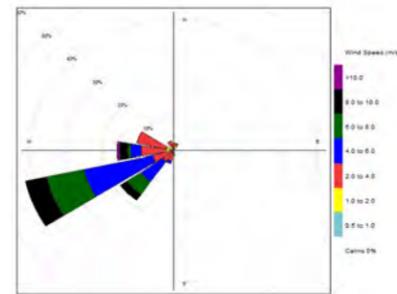


Figure 2: Wind rose during the alert event period, May 24, 2018 07:00 - May 29, 2018 18:00.

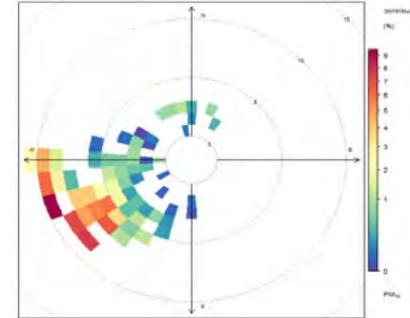


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period May 24, 2018 07:00 - May 29, 2018 18:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	-------------------	--	---------------------------

127	2018-06-02 23:00	IN Alert 'PM10 > 90% Alert': PM10 (45.7 µg/m3) at Stn 7B/C: North Camp for 2018-06-02 23:00 MST.	in	90%	PM10	Station 7C	No	N/A	No	WSW	<b>PRHP</b> : Graders and water trucks were sent out to mitigate against any suspended dust in these areas.  <b>AFDE</b> : Sites dry and dusty throughout the beginning of the week with windy conditions contributing to dust generation. Light rain occurred throughout the remainder of the week. Water tanker was utilized for dust suppression on haul/access routes during dry conditions. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extractions volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Dust suppression activities occurred on all days, including days of light rain, within this reporting period, with tanker load numbers and locations adjusted as needed each day. Equipment in good working condition with mufflers installed.	The dominant wind direction during this event was WSW (very close to the direction of Site-C excavation bank) with wind speeds up to 8 m/s.	N/A
-----	------------------	--	----	-----	------	------------	----	-----	----	-----	--	---	-----

127	2018-06-03 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	No	WSW	<b>PRHP</b> : For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notification for the week of June 03 - 09, 2018.  <b>AFDE</b> : Weather conditions at the site, were dry and dusty early in the week, transitioning to light rain on June 5 (1.2 mm) and heavier rain on June 8 (9.8 mm). The wet weather minimized the need for dust suppression activities, but when required, a water tanker was utilized. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Dust suppression activities occurred on June 4, 7, and 8 within this reporting period, with tanker load numbers and locations adjusted as needed each day. Equipment in good working condition with mufflers installed.	As noted above	N/A
-----	------------------	---	-----	-----	------	------------	----	-----	----	-----	---	----------------	-----

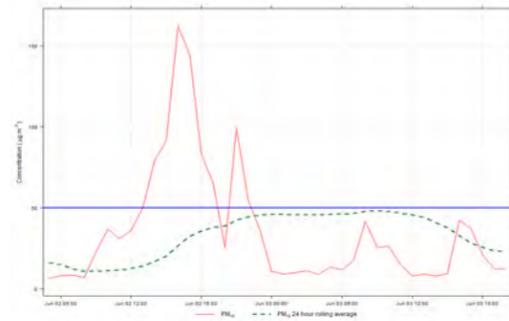


Figure 1: PM<sub>10</sub> Time series plot for the period, June 02, 2018 11:00 - June 03, 2018 00:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

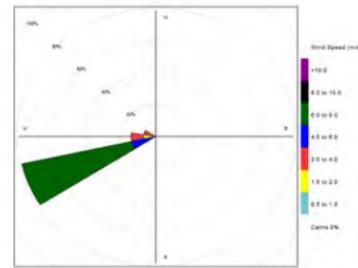


Figure 2: Wind rose during the alert event period, June 02, 2018 11:00 - June 03, 2018 00:00.

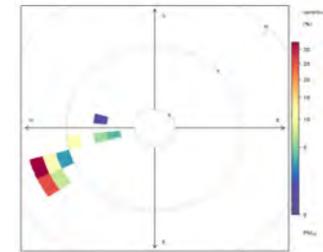


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period June 02, 2018 11:00 - June 03, 2018 00:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info	
128	2018-06-18 8:00	IN Alert 'PM10 > 90% Alert': PM10 (45.4 µg/m3) at Stn 7B/C: North Camp for 2018-06-18 08:00 MST	in	90%	PM10	Station 7C	No	N/A	No	S	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was five RWDI air quality notification for the week of June 17 - 23, 2018. Graders and water trucks were sent out to mitigate against any suspended dust in these areas.</p> <p><b>AFDE:</b> Weather conditions at the site were very dry throughout the week. The dry weather optimized the need for dust suppression activities and a water tanker was utilized. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. • Site equipment was in good working condition with mufflers installed.</p>	The dominant wind direction during this event was southerly with wind speeds up to 2 m/s.	N/A	
128	2018-06-18 11:00	IN Alert 'PM10 Alert': PM10 (50.6 µg/m3) at Stn 7B/C: North Camp for 2018-06-18 11:00 MST	in	100%	PM10	Station 7C	No	N/A	No	S		As noted above	As noted above	N/A
128	2018-06-18 12:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	100%	PM10	Station 7C	No	N/A	No	S		As noted above	As noted above	N/A
128	2018-06-18 14:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 7B/C: North Camp for 2018-06-18 14:00 MST	in	100%	PM10	Station 7C	No	N/A	No	S		As noted above	As noted above	N/A
128	2018-06-18 15:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	No	S		As noted above	As noted above	N/A
128	2018-06-19 1:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	No	S		As noted above	As noted above	N/A

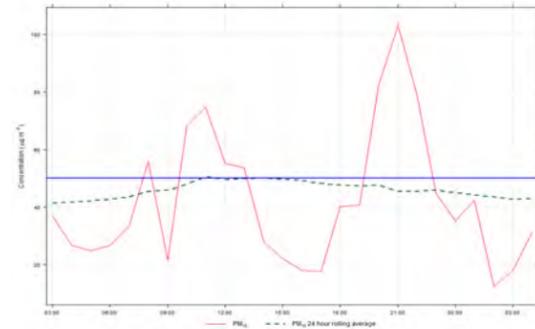


Figure 1: PM<sub>10</sub> Time series plot for the period, June 02, 2018 11:00 - June 3, 2018 00:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

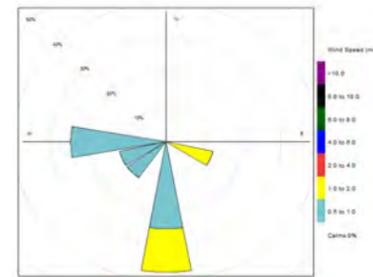


Figure 2: Wind rose during the alert event period, June 02, 2018 11:00 - June 3, 2018 00:00.

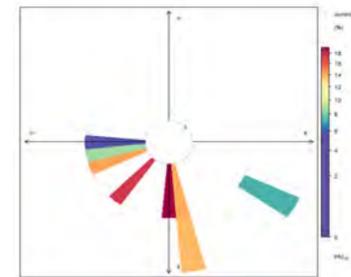


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period June 02, 2018 11:00 - June 3, 2018 00:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info			
129	2018-06-20 19:00	IN Alert 'PM10 > 90% Alert': PM10 (48.8 µg/m3) at Stn 7B/C: North Camp for 2018-06-20 19:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was five RWDI air quality notification for the week of June 17 - 23, 2018. Graders and water trucks were sent out to mitigate against any suspended dust in these areas.</p> <p><b>AFDE:</b> Weather conditions at the site were very dry throughout the week. The dry weather optimized the need for dust suppression activities and a water tanker was utilized. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. • Site equipment was in good working condition with mufflers installed.</p>	<p>The dominant wind directions during this event were WSW (very close to the direction of Site-C excavation bank) under wind speeds up to 1 m/s and exceeding 5 m/s and S with wind speeds up to 4 m/s.</p>	N/A			
129	2018-06-20 20:00	IN Alert 'PM10 Alert': PM10 (53.5 µg/m3) at Stn 7B/C: North Camp for 2018-06-20 20:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW				As noted above	As noted above	N/A
129	2018-06-21 13:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW				As noted above	As noted above	N/A
129	2018-06-21 19:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	Yes	WSW				As noted above	As noted above	N/A

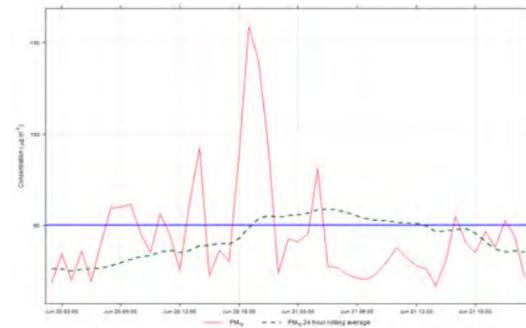


Figure 1: PM<sub>10</sub> Time series plot for the period, June 20, 2018 03:00 - June 21, 2018 03:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

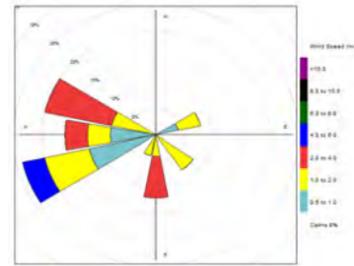


Figure 2: Wind rose during the alert event period, June 20, 2018 03:00 - June 21, 2018 03:00.

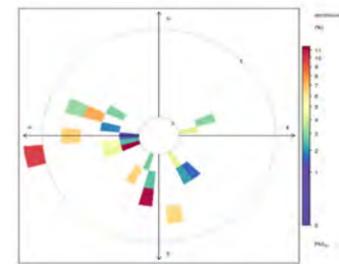


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period June 20, 2018 03:00 - June 21, 2018 03:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
130	2018-07-06 16:00	IN Alert 'PM10 > 90% Alert': PM10 (48 µg/m3) at Stn 7B/C: North Camp for 2018-07-06 16:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notification for the week of July 01 - 07, 2018.  <b>AFDE:</b> Dust suppression activities and a water tanker was utilized. Water was sourced under agreement with PRHP from the PRHP water intake extraction from the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed. • Mold Restoration Activities managed by AFDE.  <b>IDL:</b> Dust suppression was required due to dry and windy weather and construction activity. Water truck is being used to wet active areas and haul roads. Truck fills at Tracker.	The dominant wind directions during this event were WSW (very close to the direction of Site-C excavation bank) with wind speeds between 6 to 8 m/s and SW (in the direction of Site-C excavation bank) with wind speeds between 6 to 10 m/s.	N/A
130	2018-07-06 17:00	IN Alert 'PM10 Alert': PM10 (52.9 µg/m3) at Stn 7B/C: North Camp for 2018-07-06 17:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
130	2018-07-07 13:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
130	2018-07-07 14:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A

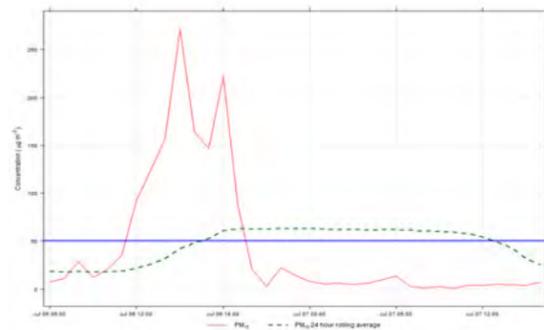


Figure 1: PM<sub>10</sub> Time series plot for the period, July 6, 2018 11:00 - 20:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

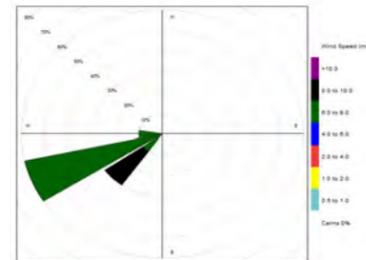


Figure 2: Wind rose during the alert event period, July 6, 2018 11:00 - 20:00.

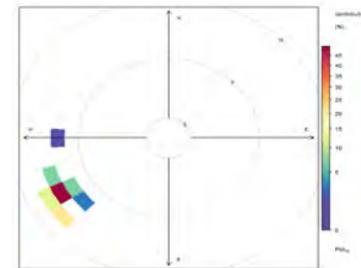


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period July 6, 2018 11:00 - 20:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info	
131	2018-07-16 1:00	IN Alert 'PM10 > 90% Alert': PM10 (45.9 µg/m3) at Stn 7B/C: North Camp for 2018-07-16 01:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were three RWDI air quality notification for the week of July 15 - July 21, 2018.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP.</p> <ul style="list-style-type: none"> <li>• Site equipment was in good working condition with mufflers installed.</li> </ul> <p><b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control. Water is purchased from the Fort St John Bulk Water Plant.</p>	The dominant wind directions during this event were WSW (very close to the direction of Site-C excavation bank) with wind speeds upto 10 m/s and WNW (in the direction of Site-C excavation close to PRHP Parking Lot) with wind speeds upto 8 m/s.	N/A	
131	2018-07-16 11:00	IN Alert 'PM10 Alert': PM10 (52.9 µg/m3) at Stn 7B/C: North Camp for 2018-07-16 11:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW		As noted above	As noted above	N/A
131	2018-07-17 17:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	Yes	WSW		As noted above	As noted above	N/A
131	2018-07-17 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW		As noted above	As noted above	N/A
131	2018-07-17 21:00	IN Alert 'PM10 > 90% Alert': PM10 (45.9 µg/m3) at Stn 7B/C: North Camp for 2018-07-17 21:00 MST	in	90%	PM10	Station 7C	No	N/A	Yes	WSW		As noted above	As noted above	N/A
131	2018-07-18 10:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW		As noted above	As noted above	N/A

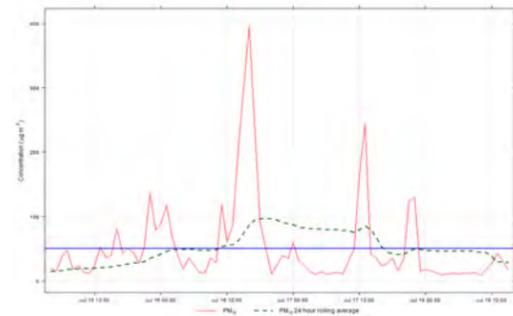


Figure 1: PM<sub>10</sub> Time series plot for the period, July 15, 2018 12:00 - July 17, 2018 23:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

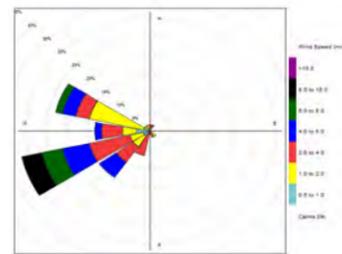


Figure 2: Wind rose during the alert event period, July 15, 2018 12:00 - July 17, 2018 23:00.

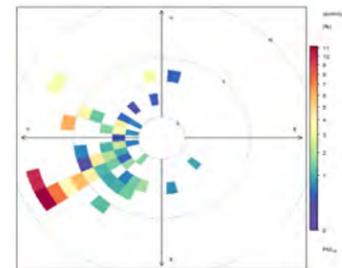


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period July 15, 2018 12:00 - July 17, 2018 23:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
132	2018-07-27 23:00	IN Alert 'PM10 > 90% Alert': PM10 (45.7 µg/m3) at Stn 7B/C: North Camp for 2018-07-27 23:00 MST	in	90%	PM10	Station 7C	No	N/A	No	E	<b>PRHP</b> : For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notification for the week of July 22 - 28, 2018. On July 29, Calcium Chloride was applied on site roads. Please refer to Appendix F for the map.  <b>AFDE</b> : Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.	The dominant wind directions during this event were easterly with wind speeds upto 4 m/s	N/A
132	2018-07-28 7:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 7B/C: North Camp for 2018-07-28 07:00 MST.	in	100%	PM10	Station 7C	No	N/A	No	E	As noted above	As noted above	N/A
132	2018-07-28 21:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	No	E	As noted above	As noted above	N/A
132	2018-07-29 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	No	E	As noted above	As noted above	N/A

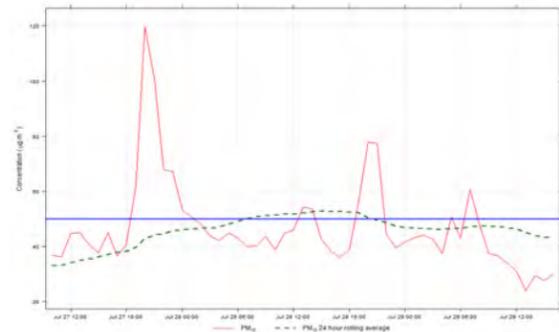


Figure 1: PM<sub>10</sub> Time series plot for the period, July 27, 2018 18:00 - July 28, 2018 22:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

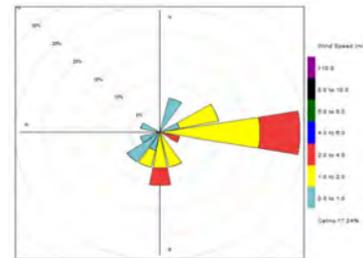


Figure 2: Wind rose during the alert event period, July 27, 2018 18:00 - July 28, 2018 22:00.

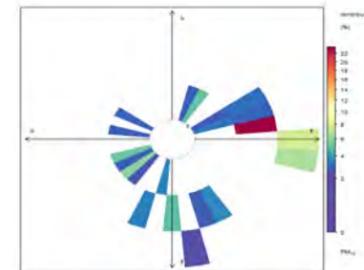


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period July 27, 2018 18:00 - July 28, 2018 22:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
135	2018-08-07 7:00	IN Alert 'PM10 > 90% Alert': PM10 (46.7 µg/m3) at Stn 7B/C: North Camp for 2018-08-07 07:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 -11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
135	2018-08-07 9:00	IN Alert 'PM10 Alert': PM10 (51.5 µg/m3) at Stn 7B/C: North Camp for 2018-08-07 09:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
135	2018-08-07 21:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
135	2018-08-08 2:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
135	2018-08-08 19:00	IN Alert 'PM10 > 90% Alert': PM10 (50 µg/m3) at Stn 7B/C: North Camp for 2018-08-08 19:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
135	2018-08-08 19:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 7B/C: North Camp for 2018-08-08 19:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
135	2018-08-11 9:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
135	2018-08-11 9:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

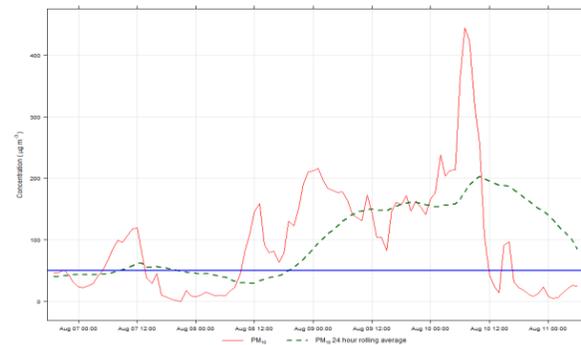


Figure 1: PM<sub>10</sub> Time series plot for the period, August 7 , 2018 03:00 - August 10, 2018 14:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

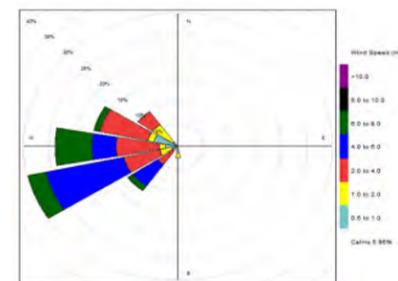


Figure 2: Wind rose during the alert event period, August 7 , 2018 03:00 - August 10, 2018 14:00.

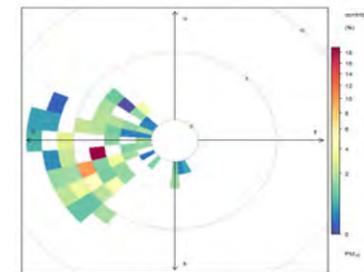


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 7 , 2018 03:00 - August 10, 2018 14:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
136	2018-08-07 11:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (24.7 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-07 11:00 MST.	in	90%	PM2.5	Station 9	No	N/A	Yes	WSW	<b>PRHP</b> : For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 -11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.  <b>AFDE</b> : Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
136	2018-08-07 12:00	IN Alert 'PM2.5 Alert': PM2.5 (27.2 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-07 12:00 MST.	in	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
136	2018-08-08 2:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
136	2018-08-08 6:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
136	2018-08-08 20:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-08 20:00 MST	in	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
136	2018-08-08 21:00	IN Alert 'PM2.5 Alert': PM2.5 (25.5 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-08 21:00 MST	in	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
136	2018-08-11 8:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
136	2018-08-11 9:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

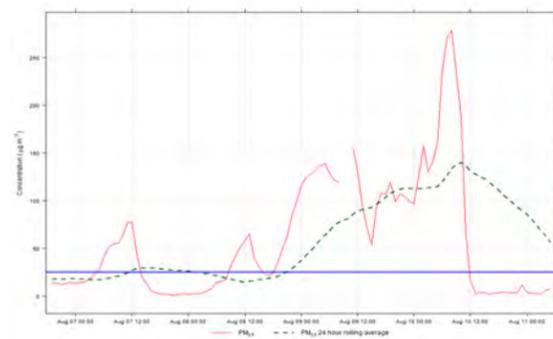


Figure 1: PM<sub>2.5</sub> Time series plot for the period, August 7, 2018 03:00 - August 10, 2018 13:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

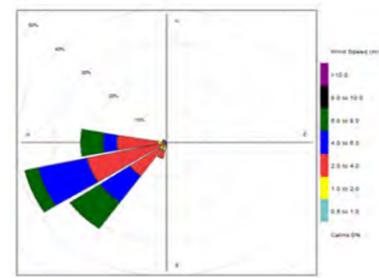


Figure 2: Wind rose during the alert event period, August 7, 2018 03:00 - August 10, 2018 13:00.

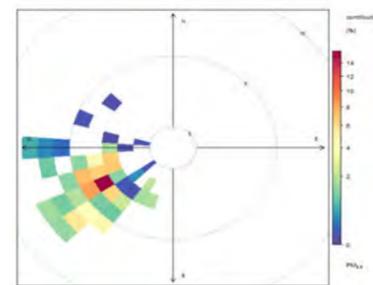


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period August 7, 2018 03:00 - August 10, 2018 13:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info			
137	2018-08-08 23:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.9 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-08 23:00 MST.	in	90%	PM2.5	Station 8	No	N/A	No	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).			
137	2018-08-09 0:00	IN Alert 'PM2.5 Alert': PM2.5 (28.4 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-09 00:00 MST.	in	100%	PM2.5	No	N/A	No	WSW	As noted above				As noted above	As noted above	
137	2018-08-15 13:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM2.5	Station 8	Yes	Alert was true until 2018-08-11 09:00 MST. After that it was found that the unit engulfed foreign particle that got stuck in nephelometer that made the OUT notification delayed.	N/A	WSW				As noted above	As noted above	As noted above
137	2018-08-15 13:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal	out	100%	PM2.5	Station 8	Yes	Alert was true until 2018-08-11 09:00 MST. After that it was found that the unit engulfed foreign particle that got stuck in nephelometer that made the OUT notification delayed.	N/A	WSW				As noted above	As noted above	As noted above

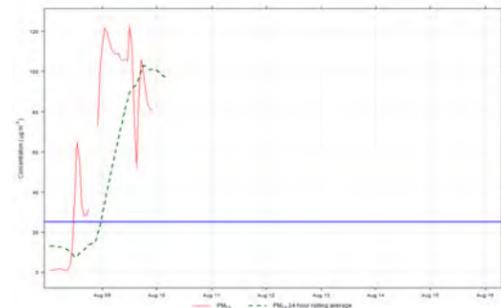


Figure 1: PM<sub>2.5</sub> Time series plot for the period, August 8, 2018 09:00 - August 15, 2018 13:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

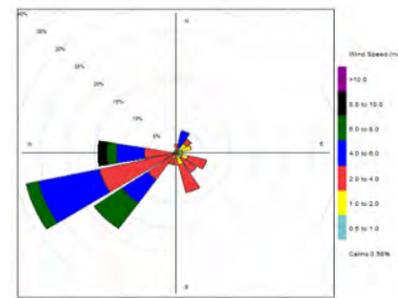


Figure 2: Wind rose during the alert event period, August 8, 2018 09:00 - August 15, 2018 13:00.

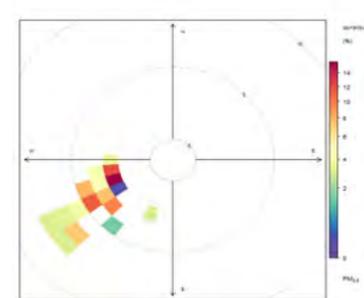


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period August 8, 2018 09:00 - August 15, 2018 13:00.

[1] Site Response provided by contractor scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
138	2018-08-08 23:00	IN Alert 'PM10 > 90% Alert': PM10 (46.9 µg/m <sup>3</sup> ) at Stn 9: Fort St. John 85th Ave for 2018-08-08 23:00 MST.	in	90%	PM10	Station 9	No	N/A	Yes	WSW - SW	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.  <b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in effect until August 27, 2018 (amended and re-issued almost on a daily basis).
138	2018-08-09 0:00	IN Alert 'PM10 Alert': PM10 (52.3 µg/m <sup>3</sup> ) at Stn 9: Fort St. John 85th Ave for 2018-08-09 00:00 MST	in	100%	PM10	Station 9	No	N/A	Yes	WSW - SW	As noted above	As noted above	As noted above
138	2018-08-11 7:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Station 9	No	N/A	Yes	WSW - SW	As noted above	As noted above	As noted above
138	2018-08-11 7:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM10	Station 9	No	N/A	Yes	WSW - SW	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.  <b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.	As noted above	As noted above

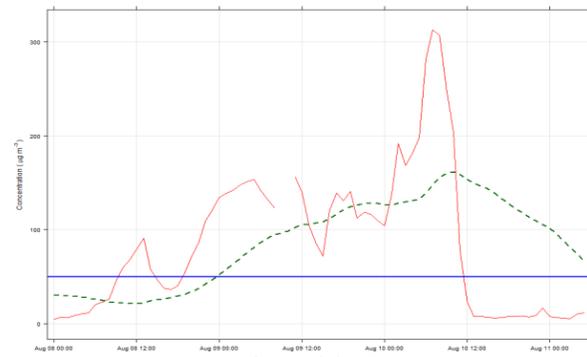


Figure 1: PM<sub>10</sub> Time series plot for the period, August 8, 2018 08:00 - August 10, 2018 13:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

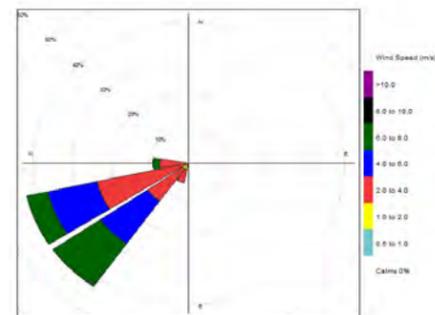


Figure 2: Wind rose during the alert event period, August 8, 2018 08:00 - August 10, 2018 13:00.

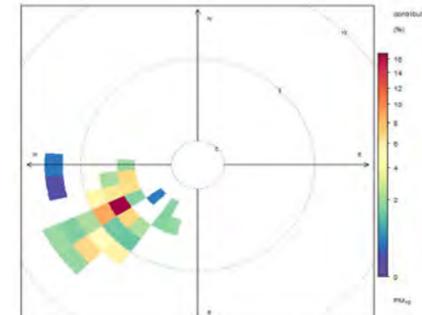


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 8, 2018 08:00 - August 10, 2018 13:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
139	2018-08-09 4:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (31 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-09 04:00 MST.	in	90%	PM2.5	Station 1	No	N/A	Yes	NE	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
139	2018-08-09 4:00	IN Alert 'PM2.5 Alert': PM2.5 (31 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-09 04:00 MST.	in	100%	PM2.5	Station 1	No	N/A	Yes	NE	As noted above	As noted above	As noted above
139	2018-08-11 7:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM2.5	Station 1	No	N/A	Yes	NE	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p>	As noted above	As noted above
139	2018-08-11 8:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM2.5	Station 1	No	N/A	Yes	NE	As noted above	As noted above	As noted above

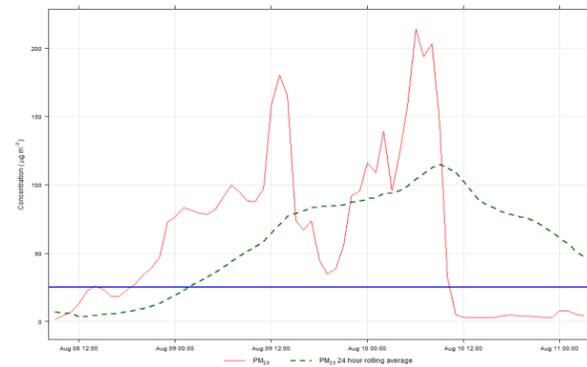


Figure 1: PM<sub>2.5</sub> Time series plot for the period, August 8, 2018 17:00 - August 10, 2018 11:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

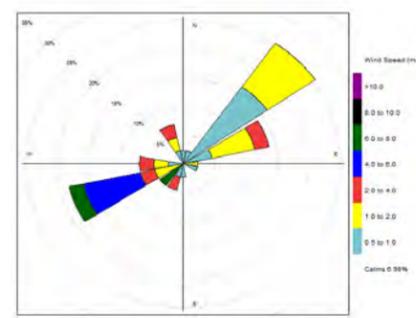


Figure 2: Wind rose during the alert event period, August 8, 2018 17:00 - August 10, 2018 11:00.

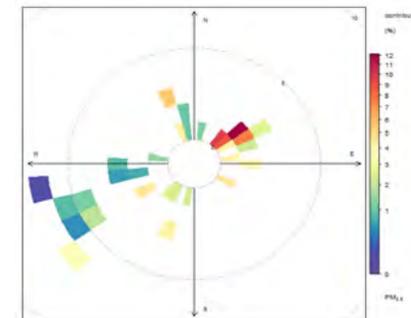


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period August 8, 2018 17:00 - August 10, 2018 11:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
140	2018-08-09 4:00	IN Alert 'PM10 > 90% Alert': PM10 (55.1 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-09 04:00 MST.	in	90%	PM10	Station 8	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 -11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
140	2018-08-09 4:00	IN Alert 'PM10 Alert': PM10 (55.1 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-09 04:00 MST.	in	100%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
140	2018-08-11 8:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
140	2018-08-11 8:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 -11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p>	As noted above	As noted above

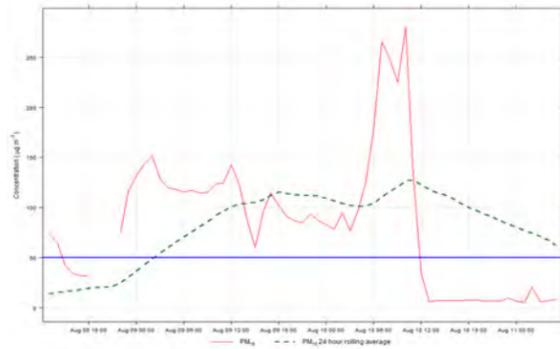


Figure 1: PM<sub>10</sub> Time series plot for the period, August 8, 2018 21:00 - August 10, 2018 13:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

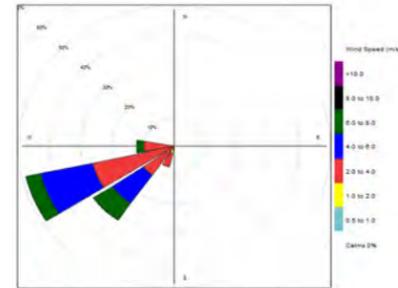


Figure 2: Wind rose during the alert event period, August 8, 2018 21:00 - August 10, 2018 13:0.

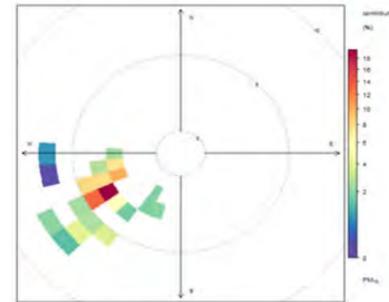


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 8, 2018 21:00 - August 10, 2018 13:0.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
141	2018-08-09 6:00	IN Alert 'PM10 > 90% Alert': PM10 (47.9 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-09 06:00 MST.	in	90%	PM10	Station 1	No	N/A	Yes	NE	<b>PRHP</b> : For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.  <b>ALLTECK</b> : No construction related air quality issues were identified during the reporting period.  <b>IDL</b> : Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
141	2018-08-09 7:00	IN Alert 'PM10 Alert': PM10 (51.9 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-09 07:00 MST.	in	100%	PM10	Station 1	No	N/A	Yes	NE	As noted above	As noted above	As noted above
141	2018-08-11 4:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM10	Station 1	No	N/A	Yes	NE	<b>PRHP</b> : For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was Eighteen RWDI air quality notification for the week of August 05 - 11, 2018. Air Quality Advisories in Fort St John occurred during the week of August 05 - 11, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.  <b>AFDE</b> : Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.	As noted above	As noted above
141	2018-08-11 5:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM10	Station 1	No	N/A	Yes	NE	As noted above	As noted above	As noted above

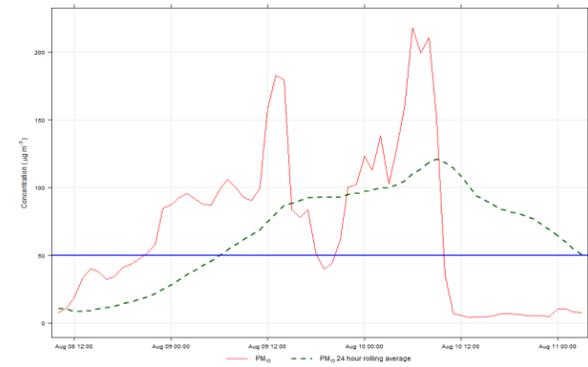


Figure 1: PM<sub>10</sub> Time series plot for the period, August 8, 2018 18:00 - August 10, 2018 11:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

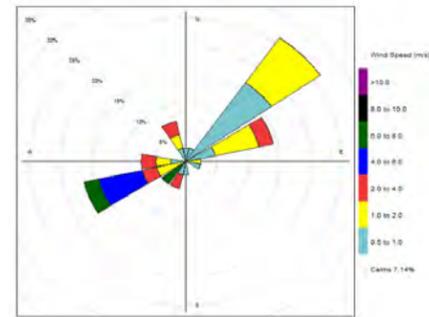


Figure 2: Wind rose during the alert event period, August 8, 2018 18:00 - August 10, 2018 11:00.

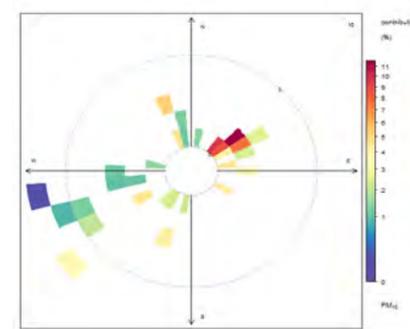


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 8, 2018 18:00 - August 10, 2018 11:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
142	2018-08-14 1:00	IN Alert 'PM10 > 90% Alert': PM10 (49.1 µg/m3) at Stn 7B/C: North Camp for 2018-08-14 01:00 MST	in	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. Air Quality Advisories in Fort St John occurred during the week of August 12 -18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
142	2018-08-14 2:00	IN Alert 'PM10 Alert': PM10 (55 µg/m3) at Stn 7B/C: North Camp for 2018-08-14 02:00 MST	in	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-19 2:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.</p>	As noted above	As noted above
142	2018-08-19 2:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-20 6:00	IN Alert 'PM10 > 90% Alert': PM10 (45.6 µg/m3) at Stn 7B/C: North Camp for 2018-08-20 06:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-20 21:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-21 6:00	IN Alert 'PM10 > 90% Alert': PM10 (46.2 µg/m3) at Stn 7B/C: North Camp for 2018-08-21 06:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-21 7:00	IN Alert 'PM10 Alert': PM10 (52.7 µg/m3) at Stn 7B/C: North Camp for 2018-08-21 07:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-23 20:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-23 20:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-24 20:00	IN Alert 'PM10 > 90% Alert': PM10 (45.4 µg/m3) at Stn 7B/C: North Camp for 2018-08-24 20:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-24 22:00	IN Alert 'PM10 Alert': PM10 (52.1 µg/m3) at Stn 7B/C: North Camp for 2018-08-24 22:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	------------------------------	--	---------------------------

**PRHP:** For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notification for the week of August 26 - September 01, 2018. Graders and water trucks are working to mitigate dust throughout site.

**AFDE:** Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with by the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.

**ALLTECK:** No construction related air quality issues were identified during the reporting period.

**IDL:** Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.

142	2018-08-26 4:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-26 6:00	IN Alert 'PM10 Alert': PM10 (55.9 µg/m3) at Stn 7B/C: North Camp for 2018-08-26 06:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-26 10:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above
142	2018-08-26 11:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	As noted above

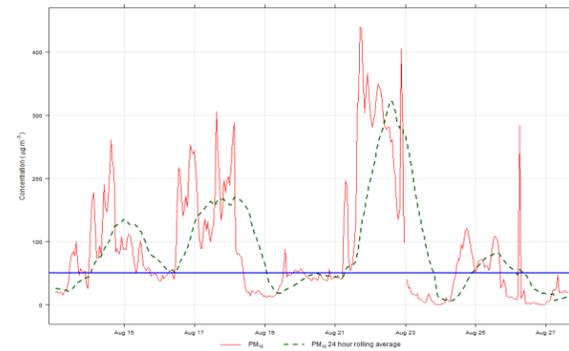


Figure 1: PM<sub>10</sub> Time series plot for the period, August 13, 2018 09:00 - August 25, 2018 21:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

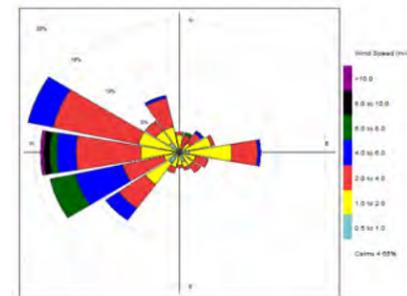


Figure 2: Wind rose during the alert event period, August 13, 2018 09:00 - August 25, 2018 21:00.

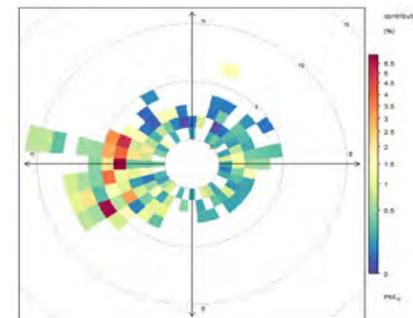


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 13, 2018 09:00 - August 25, 2018 21:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
143	2018-08-14 4:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.4 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-14 04:00 MST	in	90%	PM2.5	Station 9	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. Air Quality Advisories in Fort St John occurred during the week of August 12 -18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
143	2018-08-14 6:00	IN Alert 'PM2.5 Alert': PM2.5 (26.1 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-14 06:00 MST.	in	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-19 2:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling andprotecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.</p>	As noted above	As noted above
143	2018-08-19 2:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-19 23:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.6 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-19 23:00 MST.	in	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-20 1:00	IN Alert 'PM2.5 Alert': PM2.5 (25.9 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-20 01:00 MST.	in	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-23 21:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-23 21:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-24 15:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.6 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-24 15:00 MST.	in	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
143	2018-08-24 16:00	IN Alert 'PM2.5 Alert': PM2.5 (26.6 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-24 16:00 MST.	in	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	------------------------------	--	---------------------------

**PRHP:** For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notification for the week of August 26 - September 01, 2018. Graders and water trucks are working to mitigate dust throughout site.

**AFDE:** Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with by the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP.  
 • Site equipment was in good working condition with mufflers installed.

**ALLTECK:** No construction related air quality issues were identified during the reporting period.

**IDL:** Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.

143	2018-08-26 12:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above
143	2018-08-26 13:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No	N/A	Yes	WSW	As noted above	As noted above

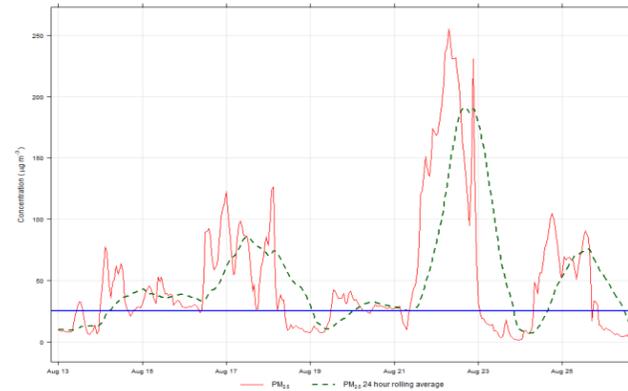


Figure 1: PM<sub>2.5</sub> Time series plot for the period, August 13, 2018 08:00 - August 25, 2018 22:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

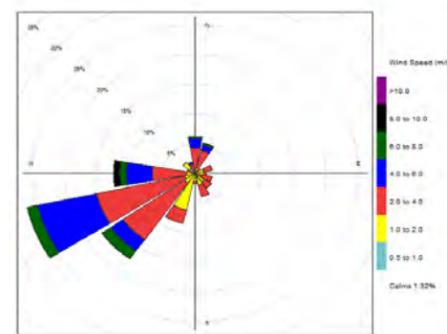


Figure 2: Wind rose during the alert event period, August 13, 2018 08:00 - August 25, 2018 22:00.

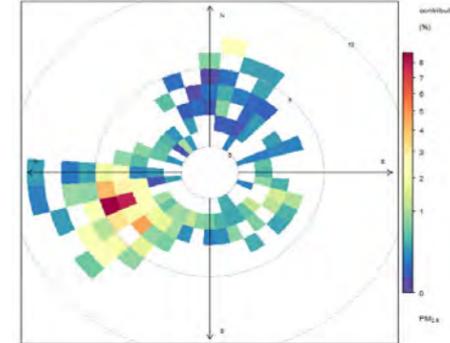


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period August 13, 2018 08:00 - August 25, 2018 22:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
144	2018-08-14 12:00	IN Alert 'PM10 > 90% Alert': PM10 (45.7 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-14 12:00 MST.	in	90%	PM10	Station 9	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. . Air Quality Advisories in Fort St John occurred during the week of August 12 -18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
144	2018-08-14 17:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-14 17:00 MST.	in	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-15 8:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal	out	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-15 11:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-15 11:00 MST.	in	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-15 12:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-15 18:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-15 18:00 MST.	in	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-16 4:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-16 10:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Starion 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-16 12:00	IN Alert 'PM10 > 90% Alert': PM10 (47.1 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-16 12:00 MST.	in	90%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-16 14:00	IN Alert 'PM10 Alert': PM10 (52 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-16 14:00 MST.	in	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-18 20:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-18 22:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-21 15:00	IN Alert 'PM10 > 90% Alert': PM10 (45.2 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-21 15:00 MST.	in	90%	PM10	Station 9	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p>	As noted above	As noted above
144	2018-08-21 16:00	IN Alert 'PM10 Alert': PM10 (50.2 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-21 16:00 MST.	in	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-23 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-23 18:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-24 20:00	IN Alert 'PM10 > 90% Alert': PM10 (46.5 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-24 20:00 MST.	in	90%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
144	2018-08-24 22:00	IN Alert 'PM10 Alert': PM10 (52.9 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-08-24 22:00 MST.	in	100%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
144	2018-08-26 4:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	100%	PM10	Station 9	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notification for the week of August 26 - September 01, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	As noted above	As noted above
144	2018-08-26 6:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Station 9	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

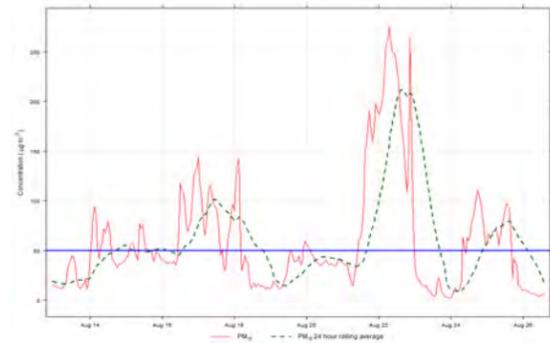


Figure 1: PM<sub>10</sub> Time series plot for the period, August 13, 2018 07:00 - August 25, 2018 22:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

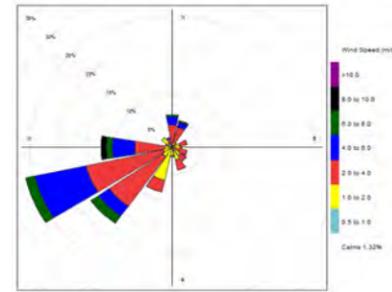


Figure 2: Wind rose during the alert event period, August 13, 2018 07:00 - August 25, 2018 22:00.

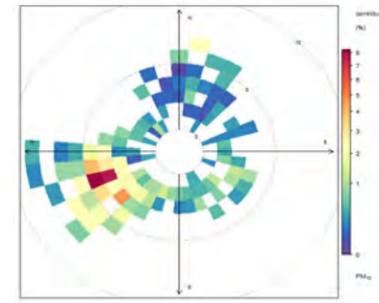


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 13, 2018 07:00 - August 25, 2018 22:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
145	2018-08-14 15:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.9 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-14 15:00 MST.	in	90%	PM2.5	Station 1	No	N/A	Yes	ENE	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. Air Quality Advisories in Fort St John occurred during the week of August 12 -18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
145	2018-08-14 19:00	IN Alert 'PM2.5 Alert': PM2.5 (20.3 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-14 19:00 MST.	in	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-18 23:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-19 0:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM2.5	Station 1	No	N/A	Yes	ENE	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	As noted above	As noted above
145	2018-08-20 3:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.7 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-20 3:00 MST.	in	90%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-20 7:00	IN Alert 'PM2.5 Alert': PM2.5 (20.3 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-20 7:00 MST.	in	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-21 4:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-21 9:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-21 15:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.9 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-21 15:00 MST.	in	90%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-21 17:00	IN Alert 'PM2.5 Alert': PM2.5 (20.3 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-21 17:00 MST.	in	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-24 3:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-24 4:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-24 20:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (25.2 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-24 20:00 MST.	in	90%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
145	2018-08-24 20:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (25.2 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-24 20:00 MST.	in	100%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	-------------------	--	---------------------------

145	2018-08-26 12:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM2.5	Station 1	No	N/A	Yes	ENE	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notification for the week of August 26 - September 01, 2018. Graders and water trucks are working to mitigate dust throughout site. AFDE: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP.                      *Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	As noted above	As noted above
-----	------------------	--	-----	------	-------	-----------	----	-----	-----	-----	--	----------------	----------------

145	2018-08-26 13:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM2.5	Station 1	No	N/A	Yes	ENE	As noted above	As noted above	As noted above
-----	------------------	--	-----	-----	-------	-----------	----	-----	-----	-----	----------------	----------------	----------------

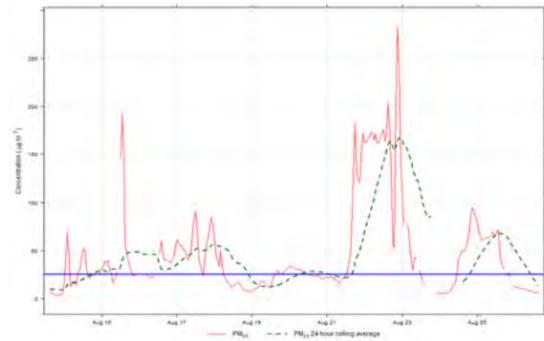


Figure 1: PM<sub>2.5</sub> time series plot for the period, August 13, 2018 23:00 - August 25, 2018 23:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>.

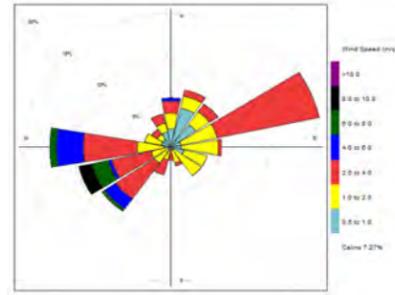


Figure 2: Wind rose during the alert event period, August 13, 2018 23:00 - August 25, 2018 23:00.

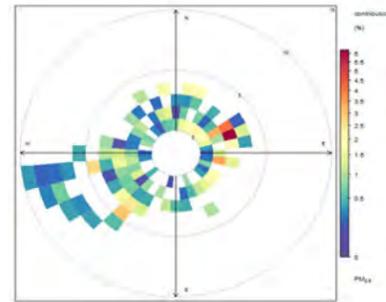


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period August 13, 2018 23:00 - August 25, 2018 23:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
146	2018-08-14 15:00	IN Alert 'PM10 > 90% Alert': PM10 (45.8 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-14 14:00 MST	in	90%	PM10	Station 8	N	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. Air Quality Advisories in Fort St John occurred during the week of August 12 -18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
146	2018-08-14 19:00	IN Alert 'PM10 Alert': PM10 (50.5 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-14 19:00 MST.	in	100%	PM10	Station 8	N	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-15 4:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	N	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-15 9:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM10	Station 8	N	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-16 17:00	IN Alert 'PM10 > 90% Alert': PM10 (46.1 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-16 17:00 MST	in	90%	PM10	Station 8	N	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-16 20:00	IN Alert 'PM10 Alert': PM10 (50.7 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-16 20:00 MST.	in	100%	PM10	Station 8	N	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-18 20:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-18 22:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-21 19:00	IN Alert 'PM10 > 90% Alert': PM10 (50.3 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-21 19:00 MST	in	90%	PM10	Station 8	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p>	As noted above	As noted above
146	2018-08-21 19:00	IN Alert 'PM10 Alert': PM10 (50.3 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-21 19:00 MST.	in	100%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-23 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-23 18:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-25 1:00	IN Alert 'PM10 > 90% Alert': PM10 (45.5 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-25 01:00 MST.	in	90%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146	2018-08-25 4:00	IN Alert 'PM10 Alert': PM10 (51.1 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-08-25 04:00 MST.	in	100%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above
146		OUT Alert 'PM10 Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Alteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
146	2018-08-25 23:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM10	Station 8	No	N/A	Yes	WSW	As noted above	As noted above	As noted above

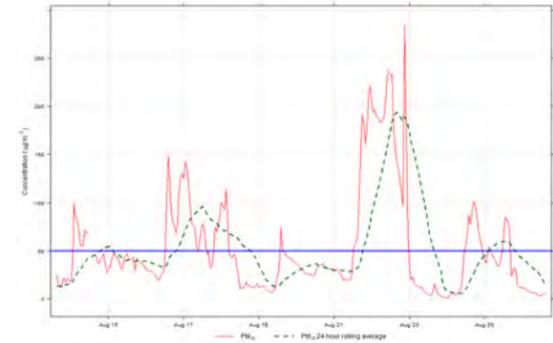


Figure 1: PM<sub>10</sub> Time series plot for the period, August 13, 2018 23:00 - August 25, 2018 23:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

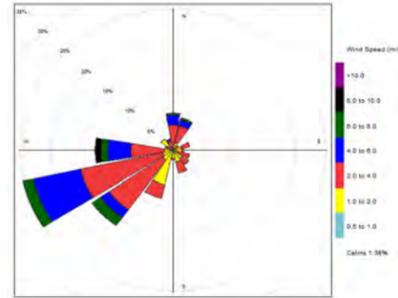


Figure 2: Wind rose during the alert event period, August 13, 2018 23:00 - August 25, 2018 23:00.

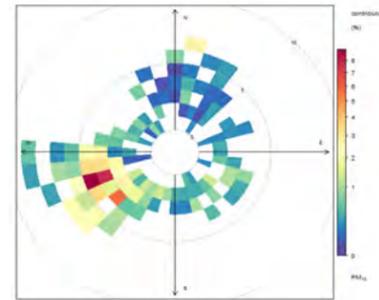


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 13, 2018 23:00 - August 25, 2018 23:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
147	2018-08-15 10:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (23.6 µg/m3) at Stn 7B/C: North Camp for 2018-08-15 10:00 MST.	in	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. Air Quality Advisories in Fort St John occurred during the week of August 12 - 18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.</p> <p><b>IDL:</b> Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p>	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in effect until August 27, 2018 (amended and re-issued almost on a daily basis).
147	2018-08-15 11:00	IN Alert 'PM2.5 Alert': PM2.5 (26.1 µg/m3) at Stn 7B/C: North Camp for 2018-08-15 11:00 MST.	in	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-19 2:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.</p>	As noted above	As noted above
147	2018-08-19 2:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-20 1:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.8 µg/m3) at Stn 7B/C: North Camp for 2018-08-20 01:00 MST.	in	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-20 4:00	IN Alert 'PM2.5 Alert': PM2.5 (25.8 µg/m3) at Stn 7B/C: North Camp for 2018-08-20 04:00 MST.	in	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-20 23:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-21 3:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-21 15:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (25.7 µg/m3) at Stn 7B/C: North Camp for 2018-08-21 15:00 MST.	in	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-21 15:00	IN Alert 'PM2.5 Alert': PM2.5 (25.7 µg/m3) at Stn 7B/C: North Camp for 2018-08-21 15:00 MST.	in	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-23 21:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-23 21:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-24 17:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (25.6 µg/m3) at Stn 7B/C: North Camp for 2018-08-24 17:00 MST.	in	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-24 17:00	IN Alert 'PM2.5 Alert': PM2.5 (25.6 µg/m3) at Stn 7B/C: North Camp for 2018-08-24 17:00 MST.	in	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above
147	2018-08-26 11:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM2.5	Station 7C	No	N/A	Yes	WNW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notification for the week of August 26 - September 01, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.</p>	As noted above	As noted above

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
147	2018-08-26 12:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	Yes	WNW	As noted above	As noted above	As noted above

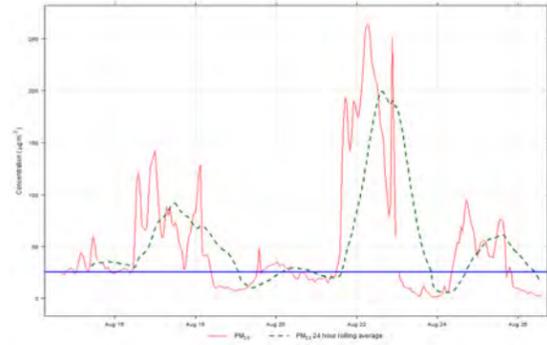


Figure 1: PM<sub>2.5</sub> Time series plot for the period, August 14, 2018 18:00 - August 25, 2018 22:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

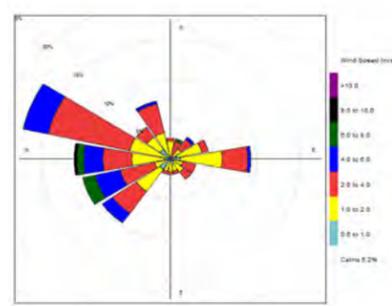


Figure 2: Wind rose during the alert event period, August 14, 2018 18:00 - August 25, 2018 22:00.

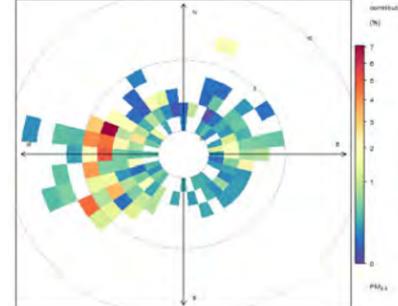


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period August 14, 2018 18:00 - August 25, 2018 22:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
148	2018-08-15 14:00	IN Alert 'PM10 > 90% Alert': PM10 (48.2 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-15 14:00 MST.	in	90%	PM10	Station 1	No	N/A	Yes	ENE	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 22 RWDI air quality notification for the week of August 12 - 18, 2018. Air Quality Advisories in Fort St John occurred during the week of August 12 -18, 2018. Graders and water trucks are working throughout site to mitigate fugitive dust.  <b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.  <b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.	Visible smoke in the area. PM Alerts came in from all the stations of Site C monitoring network.	The Government of BC issued smoky skies bulletin on July 29, 2018 stating: The Regions of BC are being impacted or are likely to be impacted by wildfire smoke over the next 24-48 hours. The smoke advisory bulletin was in affect until August 27, 2018 (amended and re-issued almost on a daily basis).
148	2018-08-15 15:00	IN Alert 'PM10 Alert': PM10 (50.8 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-15 15:00 MST.	in	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-16 12:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-16 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-17 5:00	IN Alert 'PM10 > 90% Alert': PM10 (46.1 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-17 05:00 MST.	in	90%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-17 10:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-17 10:00 MST.	in	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-18 11:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-18 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM10	Station 1	No	N/A	Yes	ENE	As noted below	As noted below	As noted below
148	2018-08-21 19:00	IN Alert 'PM10 > 90% Alert': PM10 (50.1 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-21 19:00 MST.	in	90%	PM10	Station 1	No	N/A	Yes	ENE	<b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was 33 RWDI air quality notification for the week of August 19 - August 25, 2018. Graders and water trucks are working to mitigate dust throughout site.  <b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with PRHP from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.  <b>ALLTECK:</b> No construction related air quality issues were identified during the reporting period.	As noted below	As noted below
148	2018-08-21 19:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-21 19:00 MST.	in	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted above	As noted below	As noted below
148	2018-08-23 22:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM10	Station 1	No	N/A	Yes	ENE	As noted above	As noted below	As noted below
148	2018-08-23 22:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted above	As noted below	As noted below
148	2018-08-25 1:00	IN Alert 'PM10 > 90% Alert': PM10 (47.5 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-25 01:00 MST.	in	90%	PM10	Station 1	No	N/A	Yes	ENE	As noted above	As noted below	As noted below
148	2018-08-25 3:00	IN Alert 'PM10 Alert': PM10 (52.5 µg/m3) at Stn 1: Peace Valley Attachie Flat Upper Terrace for 2018-08-25 03:00 MST.	in	100%	PM10	Station 1	No	N/A	Yes	ENE	As noted above	As noted below	As noted below

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
--------------	--------------------------	------------	----------	-----------------------	-------------	--------------	----------------------------	-----------------------------	--	--------------------------------------	-------------------	--	---------------------------

148	2018-08-26 1:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	100%	PM10	Station 1	No	N/A	Yes	ENE	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notification for the week of August 26 - September 01, 2018. Graders and water trucks are working to mitigate dust throughout site.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with by the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	As noted below	As noted below
148	2018-08-26 2:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 1: Peace Valley Attachie Flat Upper Terrace are normal.	out	90%	PM10	Station 1	No	N/A	Yes	ENE	As noted above	As noted below	As noted below

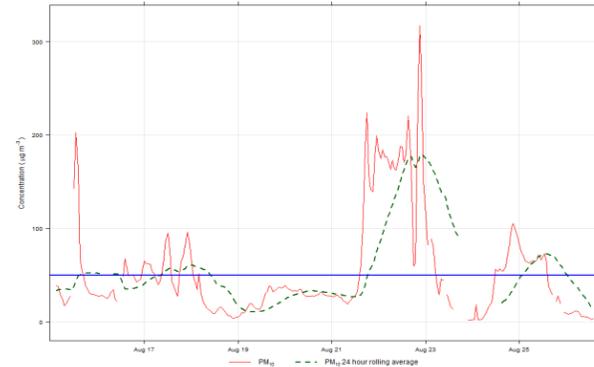


Figure 1: PM<sub>10</sub> Time series plot for the period, August 15, 2018 11:00 - August 25, 2018 22:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

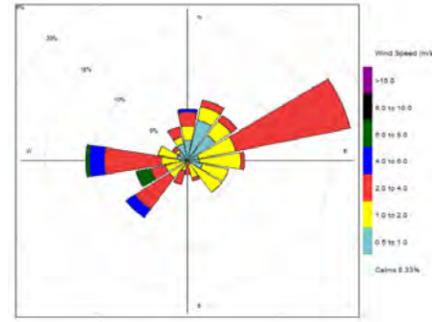


Figure 2: Wind rose during the alert event period, August 15, 2018 11:00 - August 25, 2018 22:00.

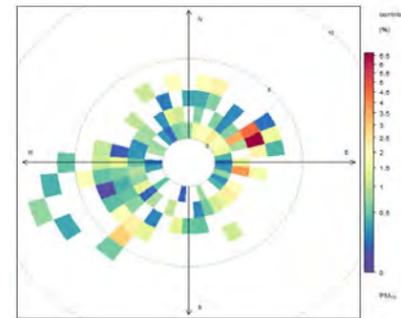


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period August 15, 2018 11:00 - August 25, 2018 22:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
149	2018-09-02 18:00	IN Alert 'PM10 > 90% Alert': PM10 (47.4 µg/m3) at Stn 7B/C: North Camp for 2018-09-02 18:00 MST	in	90%	PM10	Station 7C	No	N/A	No	WNW; SW	PRHP: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was three RWDI air quality notification for the week of September 02 - September 08, 2018.  AFDE: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with by the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.  ALLTECK: No construction related air quality issues were identified during the reporting period. IDL: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.	During the event, the wind direction was southwesterly and the wind speed ranged from 4 to 5 m/s.	N/A
149	2018-09-03 7:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	No	WNW; SW	As noted above	As noted above	N/A

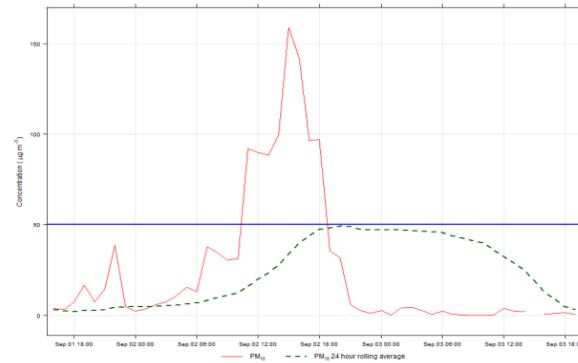


Figure 1: PM<sub>10</sub> Time series plot for the period, September 2, 2018 18:00 - September 2, 2018 21:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

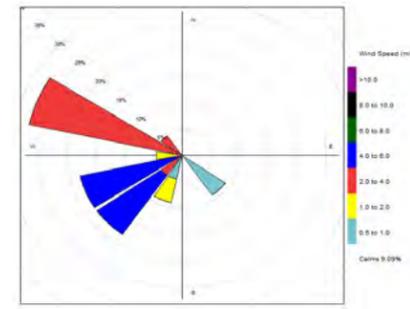


Figure 2: Wind rose during the alert event period, September 2, 2018 18:00- September 2, 2018 21:00.

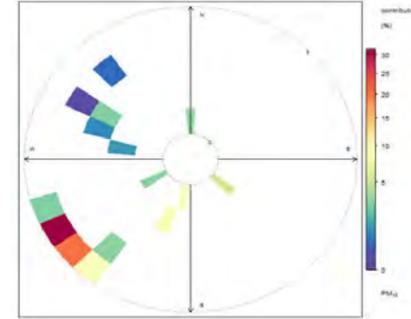


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period, September 2, 2018 - September 2, 2018 21:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
150	2018-09-04 14:00	IN Alert 'PM10 > 90% Alert': PM10 (45.1 µg/m3) at Stn 7B/C: North Camp for 2018-09-04 14:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was three RWDI air quality notification for the week of September 02 - September 08, 2018.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck. Water was sourced under agreement with by the MCW contractor (PRHP) from the PRHP water intake on the Peace River. Extraction volumes fall under the jurisdiction of the PRHP extraction permit and were therefore recorded by PRHP. Site equipment was in good working condition with mufflers installed.</p> <p><b>ALLTECK</b>: No construction related air quality issues were identified during the reporting period.</p> <p><b>IDL</b>: Water truck is being used to wet the fill for compaction and also to wet active areas and haul roads for dust control.</p>	During the event, the wind directions were SW and WNW and the wind speeds from those directions ranged from 1 m/s to 2 m/s respectively.	N/A
150	2018-09-04 17:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 7B/C: North Camp for 2018-09-04 17:00 MST	in	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	N/A
150	2018-09-05 5:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	100%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	N/A
150	2018-09-05 6:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	90%	PM10	Station 7C	No	N/A	Yes	WSW - W - WNW	As noted above	As noted above	N/A

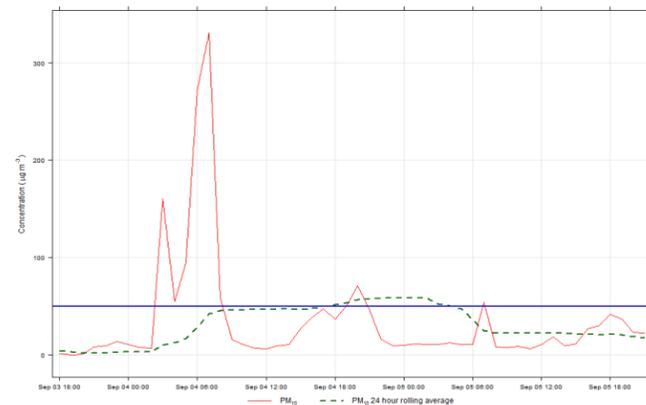


Figure 1: PM10 time series plot for the period, September 4 02:00 - September 4, 2018 23:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m³

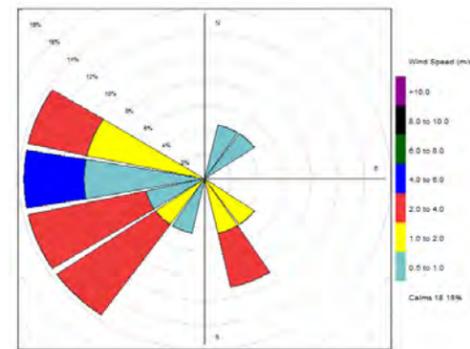


Figure 2: Wind rose during the alert event period, September 4 02:00 - September 4, 2018 23:00.

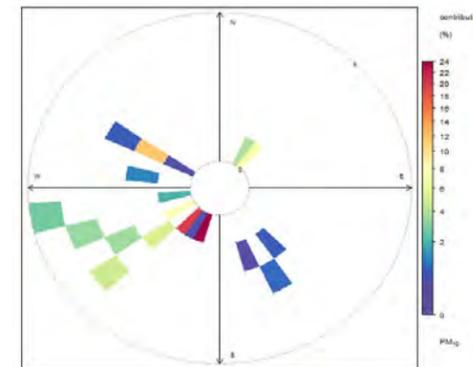


Figure 3: Polar frequency plot for PM10 during the alert event period September 4 02:00 - September 4, 2018 23:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
151	2018-10-04 6:00	IN Alert 'PM10 > 90% Alert': PM10 (46.8 µg/m3) at Stn 7B/C: North Camp for 2018-10-04 06:00 MST	in	90%	PM10	Station 7C	No	N/A	No	ENE-E	<b>PRHP</b> : For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notification for the week of September 30 - October 06, 2018. .  <b>AFDE</b> : Air Quality Management. Dust suppression activities were undertaken using a water tanker truck, with water sourced from the Area A crushing ponds. Site equipment was in good working condition with mufflers installed.  <b>IDL</b> : No dust control required at this time.	During the event, the wind directions were ENE and E and the wind speeds from those directions reached 4 m/s.	N/A
151	2018-10-04 18:00	IN Alert 'PM10 Alert': PM10 (52.2 µg/m3) at Stn 7B/C: North Camp for 2018-10-04 08:00 MST.	in	100%	PM10	Station 7C	No	N/A	No	ENE-E	As noted above	As noted above	N/A
151	2018-10-04 19:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	No	ENE-E	As noted above	As noted above	N/A
151	2018-10-04 20:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	No	ENE-E	As noted above	As noted above	N/A

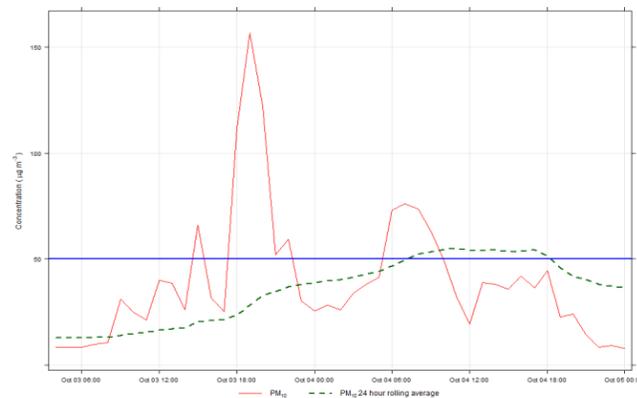


Figure 1: PM<sub>10</sub> Time series plot for the period, October 3, 2018 08:00 - October 4, 2018 12:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

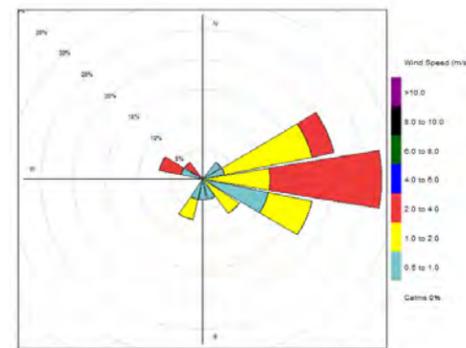


Figure 2: Wind rose during the alert event period, October 3, 2018 08:00 - October 4, 2018 12:00.

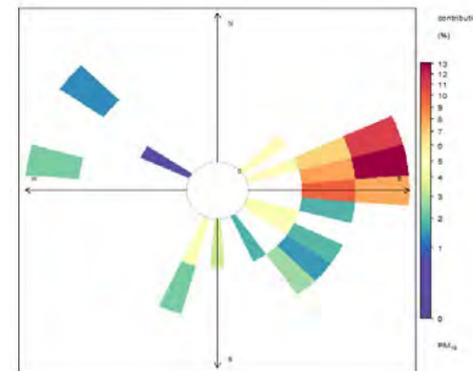


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 3, 2018 08:00 - October 4, 2018 12:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
153	2018-10-16 23:00	IN Alert 'PM10 > 90% Alert': PM10 (45.3 µg/m3) at Stn 7B/C: North Camp for 2018-10-16 23:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was six RWDI air quality notifications for the week of October 14 - October 20, 2018. During the reporting period, Water trucks were sent out to mitigate fugitive dust. On October 18, 2018 calcium chloride was applied. Map of the affected roads are featured in Appendix F.</p> <p><b>AFDE</b>: Air Quality Management: Dust suppression activities were undertaken using a water tanker truck, with water sourced from the Area A crushing ponds. RBe's generator in Area A Crushing was replaced to meets air emission requirements.</p> <p><b>IDL</b>: No dust control required at this time.</p> <p><b>Allteck</b>: No construction related air quality issues were identified during the reporting period.</p>	During the event, the wind direction was WSW (very close to the direction of Site-C excavation bank) and the wind speed from this direction reached 9 m/s.	N/A
153	2018-10-17 7:00	IN Alert 'PM10 Alert': PM10 (50.1 µg/m3) at Stn 7B/C: North Camp for 2018-10-17 07:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
153	2018-10-18 15:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
153	2018-10-18 15:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A

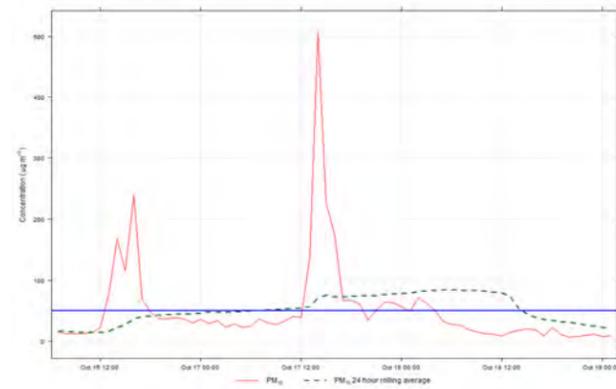


Figure 1: PM<sub>10</sub> Time series plot for the period, October 16, 2018 11:00 - October 18, 2018 05:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

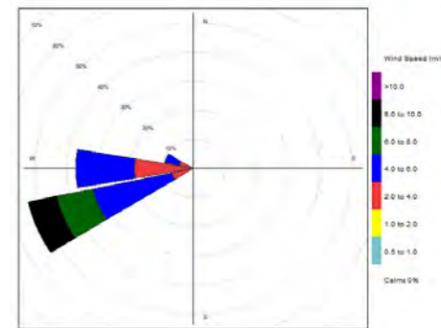


Figure 2: Wind rose during the alert event period, October 16, 2018 11:00 - October 18, 2018 05:00.

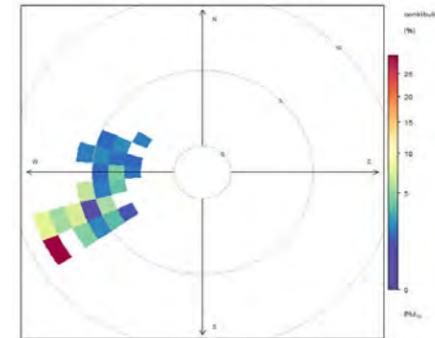


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 16, 2018 11:00 - October 18, 2018 05:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
154	2018-10-20 7:00	IN Alert 'PM10 > 90% Alert': PM10 (48.5 µg/m3) at Stn 7B/C: North Camp for 2018-10-20 07:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was six RWDI air quality notifications for the week of October 14 - October 20, 2018. During the reporting period, Water trucks were sent out to mitigate fugitive dust. On October 18, 2018 calcium chloride was applied. as shown in Appendix F.</p> <p><b>AFDE:</b> Air Quality Management • Dust suppression activities were undertaken using a water tanker truck, with water sourced from the Area A crushing ponds. RBee's generator in Area A Crushing was replaced to meets air emission requirements.</p> <p><b>Allteck:</b> No construction related air quality issues were identified during the reporting period.</p> <p><b>Kalmar:</b> No burning occurred during the reporting time period. There was no concrete removal during this reporting period. The no-idling policy was followed to reduce emissions as per EPP. Staging areas are located a significant distance from areas sensitive to emissions (e.g. residences, livestock).</p> <p><b>4Evergreen:</b> Piles prepared for burning in winter; scarification around perimeter.</p>	During the event, the wind direction was WSW (very close to the direction of Site-C excavation bank) and the wind speed from this direction reached 9 m/s.	N/A
154	2018-10-20 8:00	IN Alert 'PM10 Alert': PM10 (75 µg/m3) at Stn 7B/C: North Camp for 2018-10-20 08:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A
154	2018-10-21 17:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	WSW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was seven RWDI air quality notifications for the week of October 21 - October 27, 2018. Water trucks and graders were sent out to mitigate fugitive dust.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck, with water sourced from the Area A crushing ponds. Allteck: No construction related air quality issues were identified during the reporting period.</p> <p><b>Kalmar:</b> No burning occurred during the reporting time period. There was no concrete removal during this reporting period. The no-idling policy was followed to reduce emissions as per EPP. Staging areas are located a significant distance from areas sensitive to emissions (e.g. residences, livestock).</p> <p><b>M and M Resources:</b> No issues identified.</p> <p><b>4Evergreen:</b> Piles prepared for burning in winter; scarification around perimeter.</p>	As noted above	N/A
154	2018-10-21 17:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	WSW	As noted above	As noted above	N/A

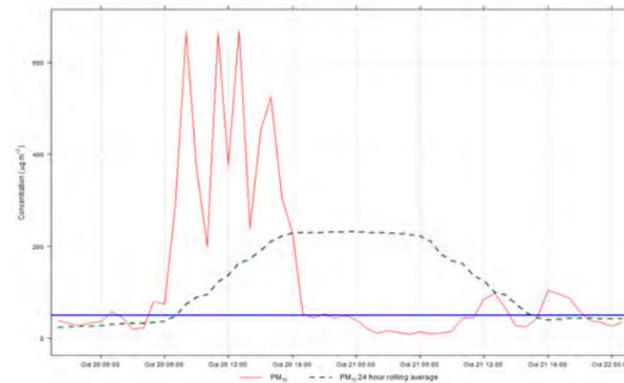


Figure 1: PM<sub>10</sub> Time series plot for the period, October 20, 2018 04:00 - October 21, 2018 02:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

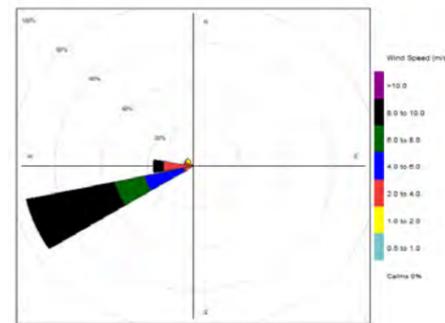


Figure 2: Wind rose during the alert event period, October 20, 2018 04:00 - October 21, 2018 02:00.

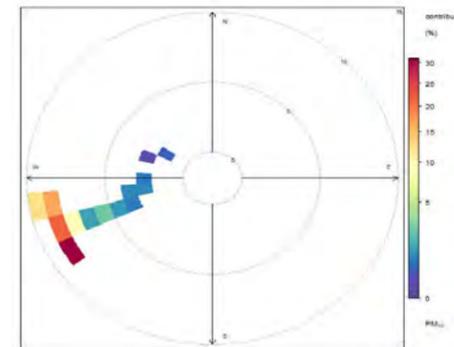


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 20, 2018 04:00 - October 21, 2018 02:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck** = transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation  
**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
155	2018-10-22 4:00	IN Alert 'PM10 > 90% Alert': PM10 (45.3 µg/m3) at Stn 7B/C: North Camp for 2018-10-22 04:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	ENE-E	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was seven RWDI air quality notifications for the week of October 21 - October 27, 2018. Water trucks and graders were sent out to mitigate fugitive dust.</p> <p><b>AFDE:</b> Dust suppression activities were undertaken using a water tanker truck, with water sourced from the Area A crushing ponds.</p> <p><b>Kalmar:</b> No burning occurred during the reporting time period. There was no concrete removal during this reporting period. The no-idling policy was followed to reduce emissions as per EPP. Staging areas are located a significant distance from areas sensitive to emissions (e.g. residences, livestock).</p> <p><b>M and M Resources:</b> No issues identified.</p> <p><b>4Evergreen:</b> Piles prepared for burning in winter; scarification around perimeter.</p>	During the event, the wind directions were ENE and WSW (very close to the direction of Site-C excavation bank) and the wind speeds from those directions reached 3 m/s and 7m/s respectively.	N/A
155	2018-10-22 9:00	IN Alert 'PM10 Alert': PM10 (50 µg/m3) at Stn 7B/C: North Camp for 2018-10-22 09:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-22 10:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-22 13:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-22 17:00	IN Alert 'PM10 > 90% Alert': PM10 (45.6 µg/m3) at Stn 7B/C: North Camp for 2018-10-22 17:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-22 18:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-23 7:00	IN Alert 'PM10 > 90% Alert': PM10 (45.3 µg/m3) at Stn 7B/C: North Camp for 2018-10-23 07:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-23 18:00	IN Alert 'PM10 Alert': PM10 (50.5 µg/m3) at Stn 7B/C: North Camp for 2018-10-23 18:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-23 19:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal	out	100%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-23 20:00	IN Alert 'PM10 Alert': PM10 (51.5 µg/m3) at Stn 7B/C: North Camp for 2018-10-23 20:00 MST.	in	100%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-26 16:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A
155	2018-10-26 16:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	ENE-E	As noted above	As noted above	N/A

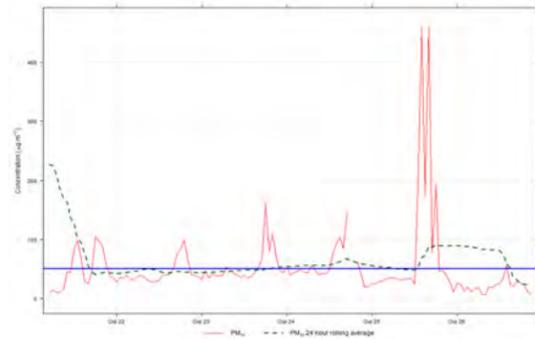


Figure 1: PM<sub>10</sub> Time series plot for the period, October 21, 2018 11:00 - October 25, 2018 23:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

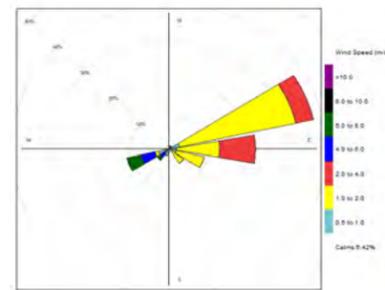


Figure 2: Wind rose during the alert event period, October 21, 2018 11:00 - October 25, 2018 23:00.

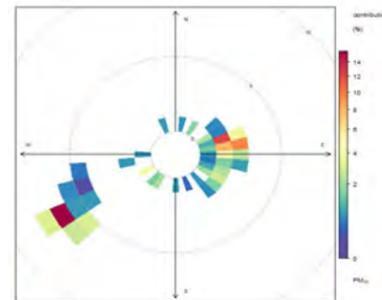


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 21, 2018 11:00 - October 25, 2018 23:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Alteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
156	2018-10-23 22:00	IN Alert 'PM10 > 90% Alert': PM10 (45.7 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-10-23 22:00 MST	in	90%	PM10	Station 9	No	N/A	No	E	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was seven RWDI air quality notifications for the week of October 21 - October 27, 2018. Water trucks and graders were sent out to mitigate fugitive dust.</p> <p><b>AFDE</b>: Dust suppression activities were undertaken using a water tanker truck, with water sourced from the Area A crushing ponds.</p> <p><b>Kalmar</b>: No burning occurred during the reporting time period. There was no concrete removal during this reporting period. The no-idling policy was followed to reduce emissions as per EPP. Staging areas are located a significant distance from areas sensitive to emissions (e.g. residences, livestock).</p> <p><b>4Evergreen</b>: Piles prepared for burning in winter; scarification around perimeter.</p>	During the event, the wind direction was easterly and the wind speed from this direction reached 3 m/s.	N/A
156	2018-10-24 19:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM10	Station 9	No	N/A	No	E	As noted above	As noted above	N/A

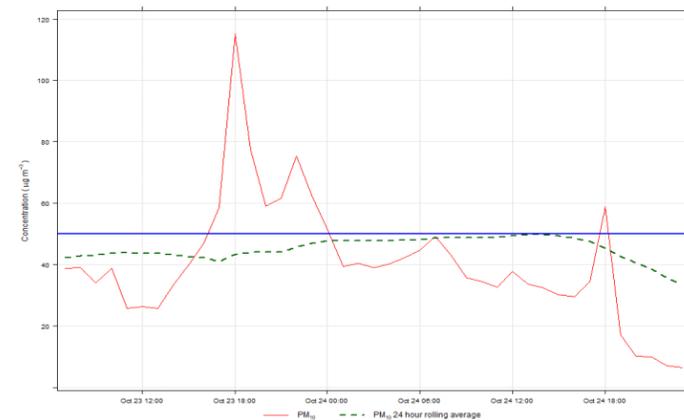


Figure 1: PM<sub>10</sub> Time series plot for the period, October 23, 2018 13:00 - October 24, 2018 01:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

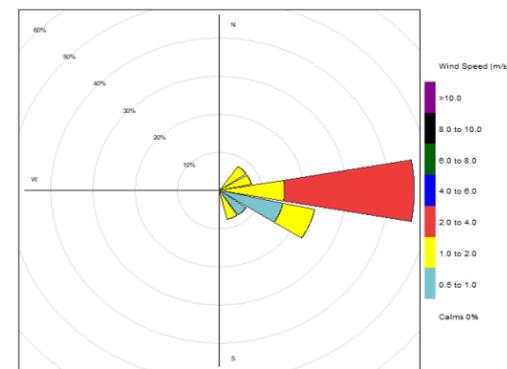


Figure 2: Wind rose during the alert event period, October 23, 2018 13:00 - October 24, 2018 01:00.

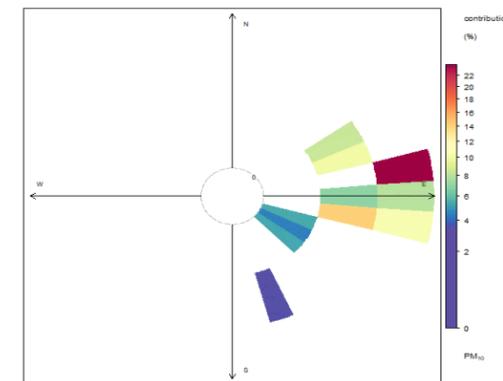


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 23, 2018 13:00 - October 24, 2018 01:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
158	2018-10-29 7:00	IN Alert PM10 (49.9 µg/m3) conditions have triggered the 'PM10 > 90% Alert' alert. An OUT alert will be sent when conditions return to normal.	in	90%	PM10	Station 7C	No	N/A	Yes	W-N	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notifications for the week of October 28 to November 3, 2018. Air Quality Map shown in Appendix F.</p> <p><b>AFDE:</b> No dust suppression activities were undertaken during the monitoring period. The CEEA site inspection conducted on November 2, 2018 resulted in the identification of a generator requiring repair adjacent to the Area A Batch trailers. The generator was replaced during the following monitoring period.</p> <p><b>Allteck:</b> No construction related air quality issues were identified during the reporting period.</p> <p><b>M and M Resources:</b> No issues identified</p>	The alerts came IN and OUT as dates mentioned in this spreadsheet column "Date/Time Alert Issued", but due to an issue in the Envision system, the notification e-mail was sent on 2018-11-02. During the event, the wind directions were NW and N, and the wind speeds from those directions were up to 1 m/s.	N/A
158	2018-10-29 8:00	IN Alert PM10 (56.7 µg/m3) conditions have triggered the 'PM10 Alert' alert. An OUT alert will be sent when conditions return to normal.	in	100%	PM10	Station 7C	No	N/A	Yes	W-N	As noted above	As noted above	N/A
158	2018-10-30 6:00	OUT Alert PM10 conditions for the 'PM10 Alert' alert at Stn 7B/C: North Camp have returned to normal.	out	100%	PM10	Station 7C	No	N/A	Yes	W-N	As noted above	As noted above	N/A
158	2018-10-30 7:00	OUT Alert PM10 conditions for the 'PM10 > 90% Alert' alert at Stn 7B/C: North Camp have returned to normal.	out	90%	PM10	Station 7C	No	N/A	Yes	W-N	As noted above	As noted above	N/A

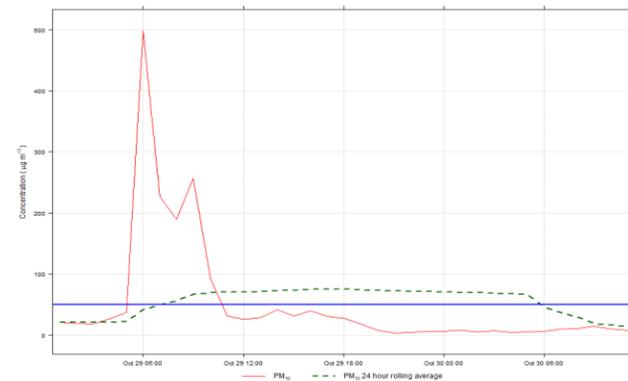


Figure 1: PM<sub>10</sub> Time series plot for the period, October 29, 2018 05:00 - October 29, 2018 11:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

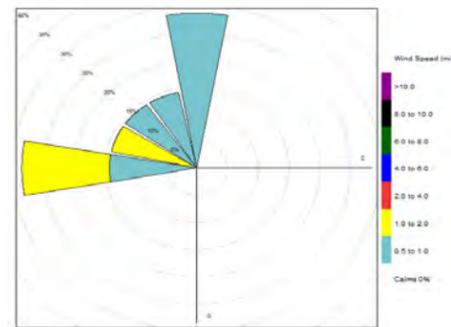


Figure 2: Wind rose during the alert event period, October 29, 2018 05:00 - October 29, 2018 11:00.

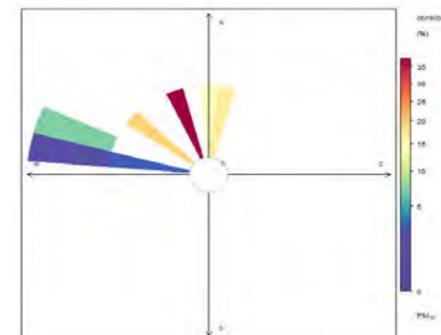


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 29, 2018 05:00 - October 29, 2018 11:00, 2018.

[1] Site Response provided by contractor, scope of contract as follows:

4Evergreen = reservoir clearing

Allteck: transmission line construction

AFDE = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

PRHP = Peace River Hydro Partners: Main Civil Works

M & M = construction services for fish habitat mitigation

IDL = joint use warehouse construction

Kalmar = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
159	2018-10-31 3:00	IN Alert PM10 (45.7 µg/m3) conditions have triggered the 'PM10 > 90% Alert' alert. An OUT alert will be sent when conditions return to normal.	in	90%	PM10	Station 7C	No	N/A	No	WSW	<p><b>PRHP:</b> PRHP: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was two RWDI air quality notifications for the week of October 28 to November 3, 2018. Air Quality Map shown in Appendix F.</p> <p><b>AFDE:</b> No dust suppression activities were undertaken during the monitoring period. The CEEA site inspection conducted on November 2, 2018 resulted in the identification of a generator requiring repair adjacent to the Area A Batch trailers. The generator was replaced during the following monitoring period.</p> <p><b>M and M Resources:</b> No issues identified</p>	The alerts came IN and OUT as dates mentioned in this spreadsheet column "Date/Time Alert Issued", but due to an issue in the Envision system, the notification e-mail was sent on 2018-11-02. During the event, the wind direction was WSW (very close to the direction of Site-C excavation bank) and the wind speed from this direction was up to 8 m/s.	N/A
159	2018-10-31 11:00	IN Alert PM10 (50.8 µg/m3) conditions have triggered the 'PM10 Alert' alert. An OUT alert will be sent when conditions return to normal.	in	100%	PM10	Station 7C	No	N/A	No	WSW	As noted above	As noted above	N/A
159	2018-10-31 13:00	OUT Alert PM10 conditions for the 'PM10 Alert' alert at Stn 7B/C: North Camp have returned to normal.	out	100%	PM10	Station 7C	No	N/A	No	WSW	As noted above	As noted above	N/A
159	2018-10-31 14:00	OUT Alert PM10 conditions for the 'PM10 > 90% Alert' alert at Stn 7B/C: North Camp have returned to normal.	out	90%	PM10	Station 7C	No	N/A	No	WSW	As noted above	As noted above	N/A

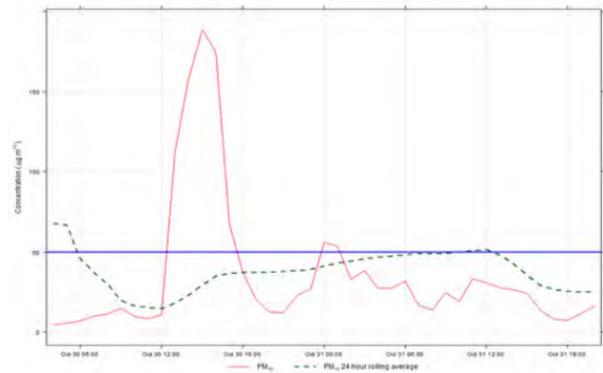


Figure 1: PM<sub>10</sub> Time series plot for the period, October 30, 2018 12:00 - October 31 02:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

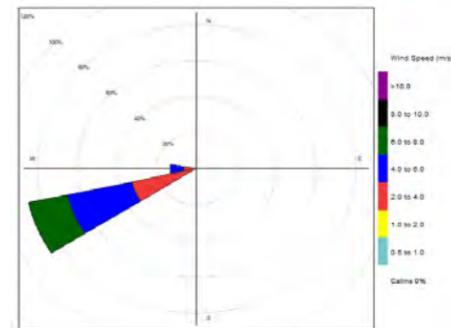


Figure 2: Wind rose during the alert event period, October 30, 2018 12:00 - October 31 02:00.

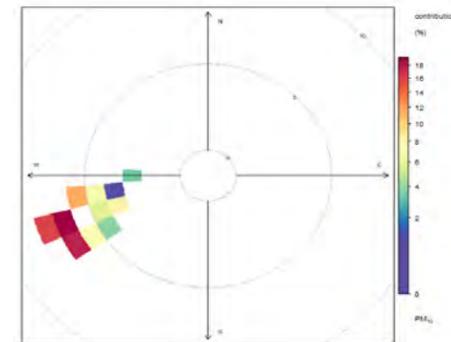


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period October 30, 2018 12:00 - October 31 02:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck** = transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
160	2018-11-04 13:00	IN Alert 'PM10 > 90% Alert': PM10 (45 µg/m3) at Stn 7B/C: North Camp for 2018-11-04 13:00 MST.	in	90%	PM10	Station 7C	No	N/A	Yes	NW	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were no air quality notifications for the week of November 4 - November 10, 2018. <b>AFDE:</b> No dust suppression activities were undertaken during the monitoring period. The CEEA site inspection conducted on November 2, 2018 resulted in the identification of a generator requiring repair adjacent to the Area A Batch trailers. The generator was replaced during the monitoring period.</p> <p><b>Allteck:</b> No construction related air quality issues were identified during the reporting period. As the temperature continues to decrease, vehicle and equipment idling will likely increase. Crew have been reminded to exercise good judgment when leaving vehicles and equipment idling (e.g., one crew truck vs. four individual vehicles).</p> <p><b>Kalmar:</b> No burning occurred during the reporting time period. Staging areas are located a significant distance from areas sensitive to emissions (e.g. residences, livestock) and the no-idling policy as per the EPP has been followed throughout the project</p> <p><b>4Evergreen:</b> Noise was not a concern as work was away from residential areas. Burn pile inventory was initiated on the 45/1 Road. Piles have been prepared for burning in winter; scarification around perimeter. No burning to date.</p>	During the event, the wind directions was northwesterly and the wind speed from this direction reached 4 m/s.	N/A
160	2018-11-04 17:00	IN Alert 'PM10 Alert': PM10 (51.8 µg/m3) at Stn 7B/C: North Camp for 2018-11-04 17:00 MST	in	100%	PM10	Station 7C	No	N/A	Yes	NW	As noted above	As noted above	N/A
160	2018-11-05 5:00	OUT Alert 'PM10 Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	100%	PM10	Station 7C	No	N/A	Yes	NW	As noted above	As noted above	N/A
160	2018-11-05 6:00	OUT Alert 'PM10 > 90% Alert': PM10 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM10	Station 7C	No	N/A	Yes	NW	As noted above	As noted above	N/A

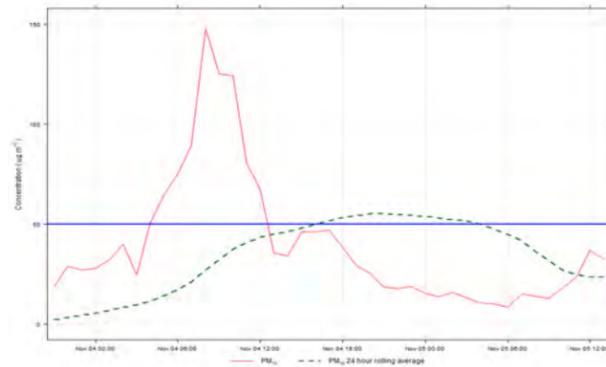


Figure 1: PM10 time series plot for the period, November 4, 2018 03:00 - November 4, 2018 13:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 50 µg/m<sup>3</sup>

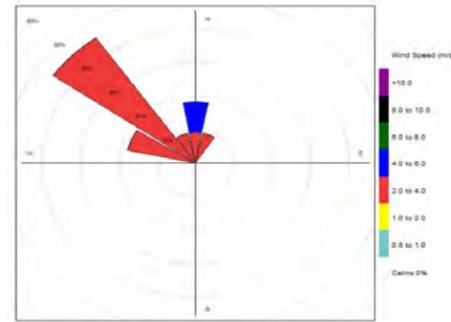


Figure 2: Wind rose during the alert event period, November 4, 2018 03:00 - November 4, 2018 13:00.

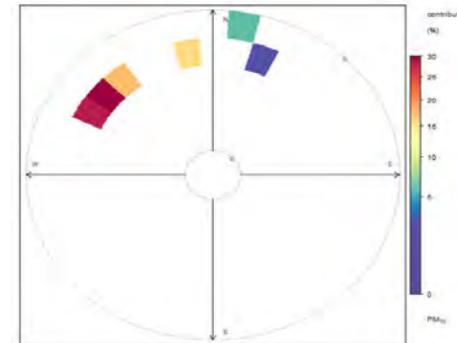


Figure 3: Polar frequency plot for PM<sub>10</sub> during the alert event period November 4, 2018 03:00 - November 4, 2018 13:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>(1)</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
161	2018-11-15 3:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.9 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-11-15 03:00 MST.	in	90%	PM2.5	Station 8	No	N/A	No	N	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were four RWDI air quality notifications for the week of November 11 - November 17, 2018. Due to colder temperatures and safety concerns, watering of the roads has been reduced to prevent icy road conditions. The date of the above Air Alerts correlates with blasting activities occurring on site.</p> <p><b>4Evergreen</b>: Piles have been prepared for burning in winter; scarification around perimeter. No burning to date.</p> <p><b>AFDE</b>: Air Quality Management. No dust suppression activities were undertaken during the monitoring period.</p> <p><b>Allteck</b>: Air Quality Management: No construction related air quality issues were identified during the reporting period.</p> <p><b>Kalmar</b>: Air Quality Management: No air quality concerns.</p> <p><b>M&amp;M Resources</b>: No issues identified. Vehicle idling minimized where practicable.</p>	Hourly PM2.5 concentrations as high as 60µg/m3 were noted during this event. However, after RWDI's data validation process it was determined that the 24-Hr rolling avg was below threshold. Hence, no measured excursion occurred.	N/A
161	2018-11-15 6:00	IN Alert 'PM2.5 Alert': PM2.5 (25.2 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-11-15 06:00 MST.	in	100%	PM2.5	Station 8	No	N/A	No	N	As noted above	As noted above	N/A
161	2018-11-15 16:00	OUT Alert 'PM2.5 Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	100%	PM2.5	Station 8	No	N/A	No	N	As noted above	As noted above	N/A
161	2018-11-15 17:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM2.5	Station 8	No	N/A	No	N	As noted above	As noted above	N/A

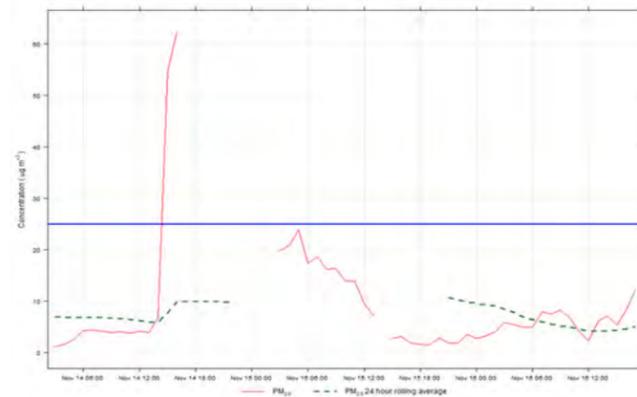


Figure 1: PM<sub>2.5</sub> Time series plot for the period, November 15, 2018 03:00 - 17:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

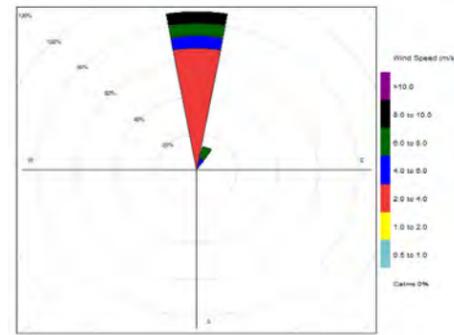


Figure 2: Wind rose during the alert event period, November 15, 2018 03:00 - 17:00.

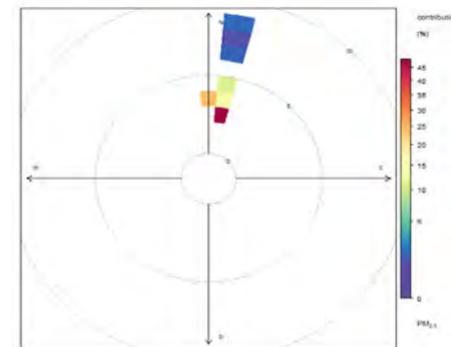


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period November 15, 2018 03:00 - 17:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing  
**Allteck**: transmission line construction  
**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works  
**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction  
**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
162	2018-11-15 10:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.7 µg/m3) at Stn 7B/C: North Camp for 2018-11-15 10:00 MST.	in	90%	PM2.5	Station 7C	No	N/A	No	N-NNE	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were four RWDI air quality notifications for the week of November 11 - November 17, 2018. Due to colder temperatures and safety concerns, watering of the roads has been reduced to prevent icy road conditions. The date of the above Air Alerts correlates with blasting activities occurring on site.</p> <p><b>4Evergreen:</b> Piles have been prepared for burning in winter; scarification around perimeter. No burning to date.</p> <p><b>AFDE:</b> Air Quality Management: No dust suppression activities were undertaken during the monitoring period.</p> <p><b>Allteck:</b> Air Quality Management: No construction related air quality issues were identified during the reporting period.</p> <p><b>Kalmar:</b> Air Quality Management: No air quality concerns.</p> <p><b>M&amp;M Resources:</b> No issues identified. Vehicle idling minimized where practicable.</p>	During the event, wind direction that contributed the most particulate matter was NNE and the wind speed from this direction was up to 6 m/s.	N/A
162	2018-11-15 15:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	No	N-NNE	As noted above	As noted above	N/A

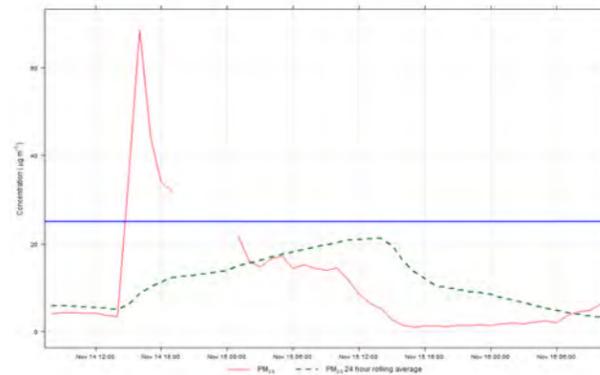


Figure 1: PM<sub>2.5</sub> Time series plot for the period, November 14, 2018 14:00 - November 15, 2018 10:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

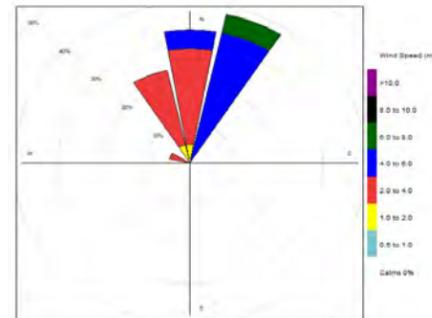


Figure 2: Wind rose during the alert event period, November 14, 2018 14:00 - November 15, 2018 10:00.

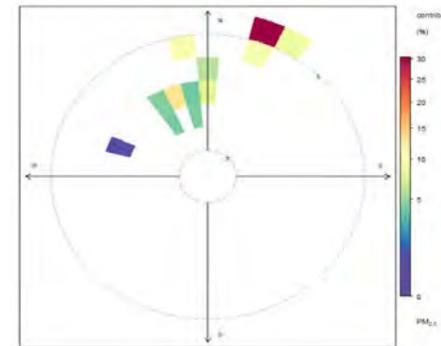


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period November 14, 2018 14:00 - November 15, 2018 10:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
163	2018-11-15 13:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.6 µg/m3) at Stn 9: Fort St. John 85th Ave for 2018-11-15 13:00 MST.	in	90%	PM2.5	Station 9	No	N/A	No	N-NNE	<p><b>PRHP:</b> For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were four RWDI air quality notifications for the week of November 11 - November 17, 2018. Due to colder temperatures and safety concerns, watering of the roads has been reduced to prevent icy road conditions. The date of the above Air Alerts correlates with blasting activities occurring on site.</p> <p><b>4Evergreen:</b> Piles have been prepared for burning in winter; scarification around perimeter. No burning to date.</p> <p><b>AFDE:</b> Air Quality Management; No dust suppression activities were undertaken during the monitoring period.</p> <p><b>Allteck:</b> Air Quality Management: No construction related air quality issues were identified during the reporting period.</p> <p><b>Kalmar:</b> Air Quality Management: No air quality concerns.</p> <p><b>M&amp;M Resources:</b> No issues identified. Vehicle idling minimized where practicable.</p>	During the event, wind directions that contributed the most particulate matter were N and NNE. The wind speed from these directions were up to 5 m/s.	N/A
163	2018-11-15 15:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 9: Fort St. John 85th Ave are normal.	out	90%	PM2.5	Station 9	No	N/A	No	N-NNE	As noted above	As noted above	N/A

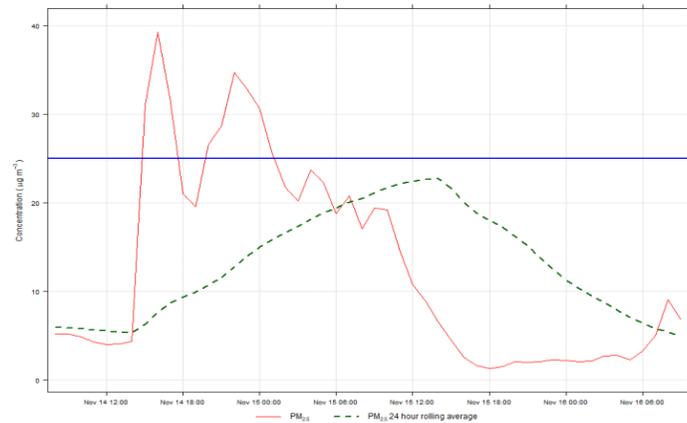


Figure 1: PM<sub>2.5</sub> Time series plot for the period, November 14, 2018 14:00 - November 15, 2018 09:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

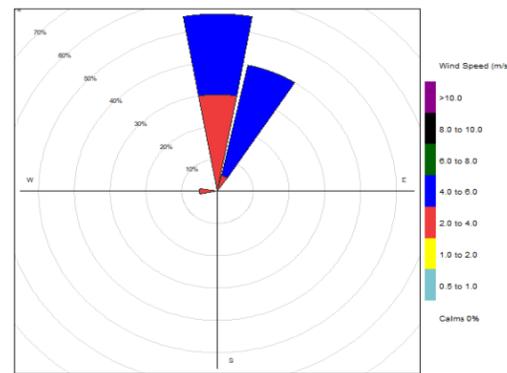


Figure 2: Wind rose during the alert event period, November 14, 2018 14:00 - November 15, 2018 09:00.

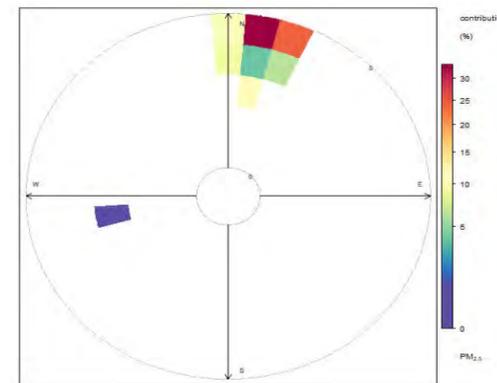


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period November 14, 2018 14:00 - November 15, 2018 09:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
164	2018-11-21 19:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.8 µg/m3) at Stn 7B/C: North Camp for 2018-11-21 19:00 MST.	in	90%	PM2.5	Station 7C	No	N/A	No	W-WNW-ENE	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were no RWDI air quality notifications for the week of November 25 - December 1, 2018.</p> <p><b>4Evergreen</b>: Piles have been prepared for burning in winter; scarification around perimeter. No burning to date.</p> <p><b>AFDE</b>: Air Quality Management: No dust suppression activities were undertaken during the monitoring period.</p> <p><b>Allteck</b>: Air Quality Management. No construction related air quality issues were identified during the reporting period.</p> <p><b>M&amp;M Resources</b>: No issues identified. Vehicle idling minimized where practicable.</p>	During the event, wind direction that contributed the most particulate matter was from ENE and the wind speed from this direction was up to 3 m/s.	N/A
164	2018-11-22 4:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 7B/C: North Camp are normal.	out	90%	PM2.5	Station 7C	No	N/A	No	W-WNW-ENE	As noted above	As noted above	N/A

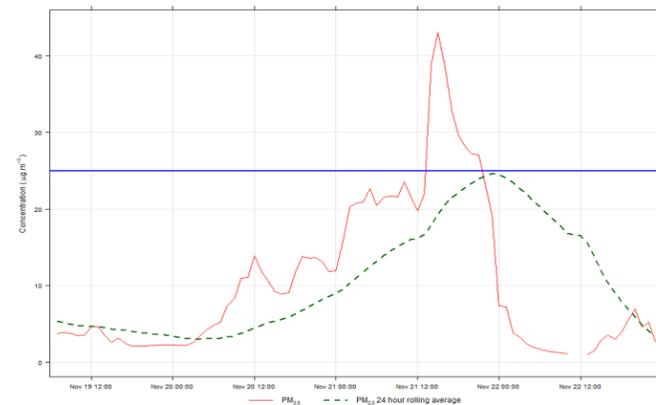


Figure 1: PM<sub>2.5</sub> Time series plot for the period, November 20, 2018 07:00 - November 21, 2018 23:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

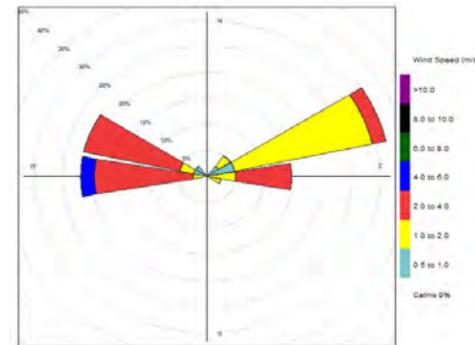


Figure 2: Wind rose during the alert event period, November 20, 2018 07:00 - November 21, 2018 23:00.

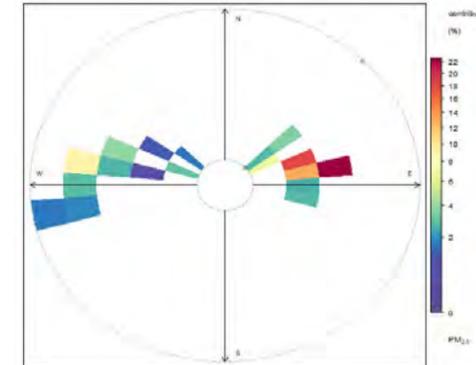


Figure 3: Wind rose during the alert event period, November 20, 2018 07:00 - November 21, 2018 23:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response [1]	Comments Regarding Conditions / Observations	Regional Air Quality Info
165	2018-11-21 23:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.6 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-11-21 23:00 MST.	in	90%	PM2.5	Station 8	No	N/A	No	SW	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There were two air quality notifications for the week of November 18 - November 24, 2018.</p> <p><b>4Evergreen</b>: Piles have been prepared for burning in winter; scarification around perimeter. No burning to date.</p> <p><b>AFDE</b>: AFDE: Air Quality Management: No dust suppression activities were undertaken during the monitoring period. Management.</p> <p><b>Allteck</b>: Air Quality Management. No construction related air quality issues were identified during the reporting period.</p> <p><b>M&amp;M Resources</b>: No issues identified. Vehicle idling minimized where practicable.</p>	During the event, wind directions that contributed the most particulate matter were SW, SSE and SE. The respective wind speed from these directions were up to 4 m/s, 2 m/s, and 2 m/s.	N/A
165	2018-11-22 8:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM2.5	Station 8	No	N/A	No	SW	As noted above	As noted above	N/A

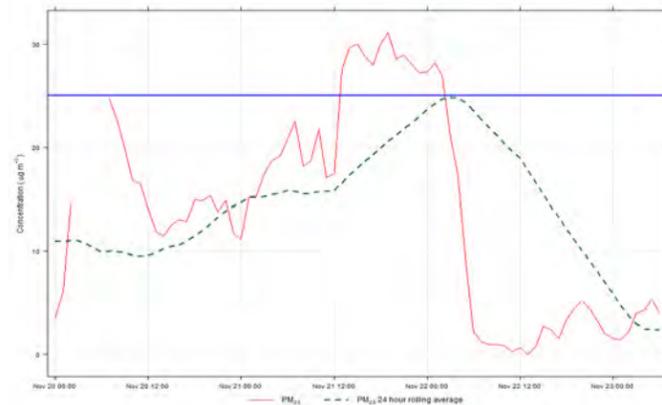


Figure 1: PM<sub>2.5</sub> Time series plot for the period, November 21, 2018 00:00 - November 22, 2018 06:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

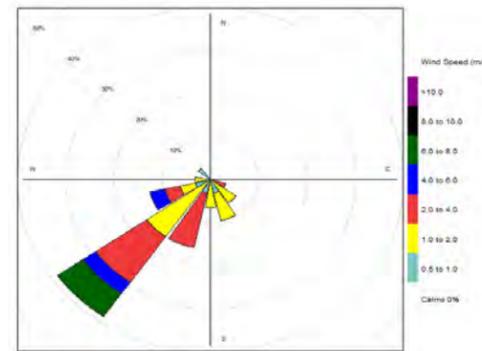


Figure 2: Wind rose during the alert event period, November 21, 2018 00:00 - November 22, 2018 06:00.

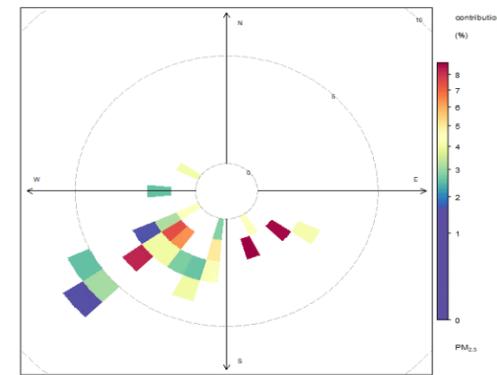


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period November 21, 2018 - November 22, 2018 06:00.

[1] Site Response provided by contractor, scope of contract as follows:

**4Evergreen** = reservoir clearing

**Allteck**: transmission line construction

**AFDE** = Aecon, Flatiron, Dragados, and EBC: Generating Station and Spillways Civil Works

**PRHP** = Peace River Hydro Partners: Main Civil Works

**M & M** = construction services for fish habitat mitigation

**IDL** = joint use warehouse construction

**Kalmar** = building demolition services

Event Number	Date / Time Alert Issued	Alert Text	IN / OUT	Threshold 90% or 100%	Contaminant	Station Name	Instrument Error? (Yes/No)	Reason for Instrument Error	Did Measured Exceedance / Excursion Occur?	Dominant Wind Direction During Event	Site Response <sup>[1]</sup>	Comments Regarding Conditions / Observations	Regional Air Quality Info
166	2018-12-07 4:00	IN Alert 'PM2.5 > 90% Alert': PM2.5 (22.7 µg/m3) at Stn 8: Fort St. John Old Fort for 2018-12-07 04:00 MST.	in	90%	PM2.5	Station 8	No	N/A	No	SW-WSW-W	<p><b>PRHP</b>: For the purposes of fugitive dust emissions from construction and production activities, the business unit performing those activities will self-manage and is ultimately responsible for controlling and protecting workers from those associated hazards, whether that be the installation of sprinkler systems or calling upon water truck support. The PRHP QHSE Department will continue to support each business unit in their efforts to mitigate dust hazards. There was one RWDI air quality notifications for the week of December 02 - December 08, 2018.</p> <p><b>AFDE</b>: Air Quality Management: No dust suppression activities were undertaken during the monitoring period.</p> <p><b>Allteck</b>: Air Quality Management. No construction related air quality issues were identified during the reporting period.</p> <p><b>M &amp; M Resources</b> : No issues identified. Vehicle idling minimized where practicable.</p>	During the event, wind directions that contributed the most particulate matter were SSW, WSW and W. The respective wind speed from these directions were up to 4 m/s, 6 m/s, and 5 m/s.	N/A
166	2018-12-07 15:00	OUT Alert 'PM2.5 > 90% Alert': PM2.5 conditions at Stn 8: Fort St. John Old Fort are normal.	out	90%	PM2.5	Station 8	No	N/A	No	SW-WSW-W	As noted above	As noted above	N/A

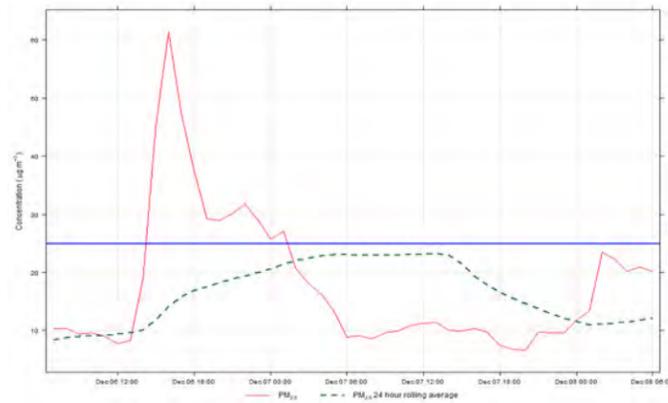


Figure 1: PM<sub>2.5</sub> Time series plot for the period, December 6, 2018 13:00 - December 7, 2018 06:00. Blue line indicates the 24-hour BC Ambient Air Quality Objective of 25 µg/m<sup>3</sup>

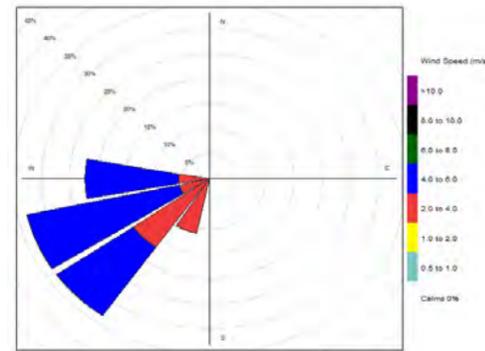


Figure 2: Wind rose during the alert event period, December 6, 2018 13:00 - December 7, 2018 06:00.

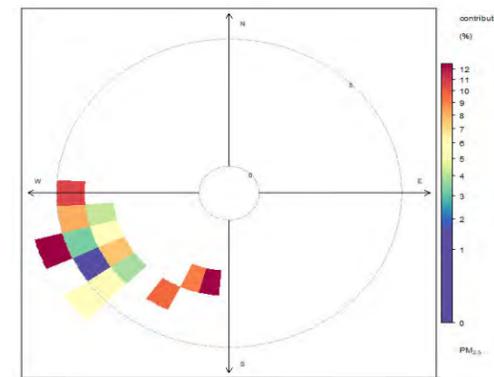
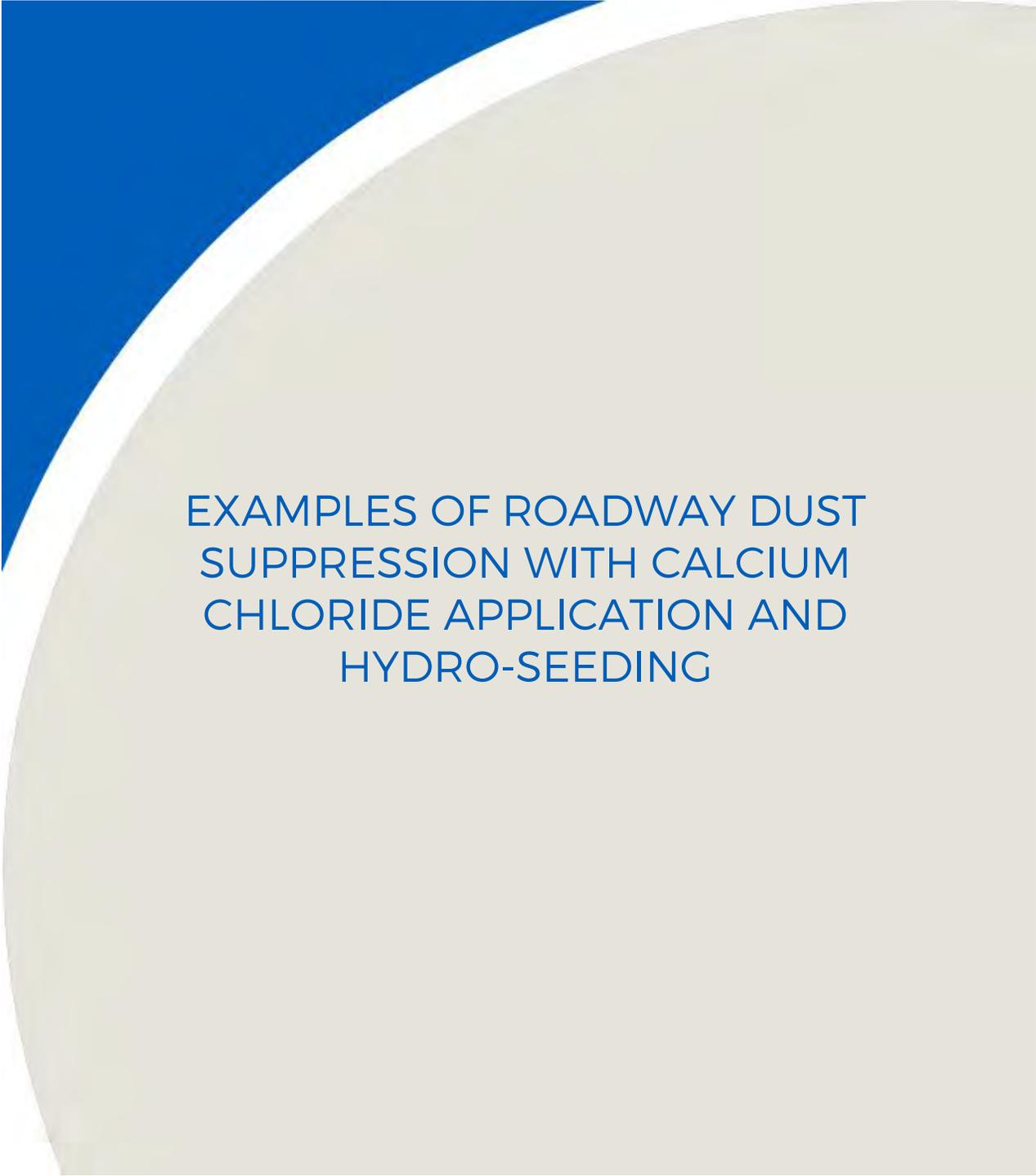
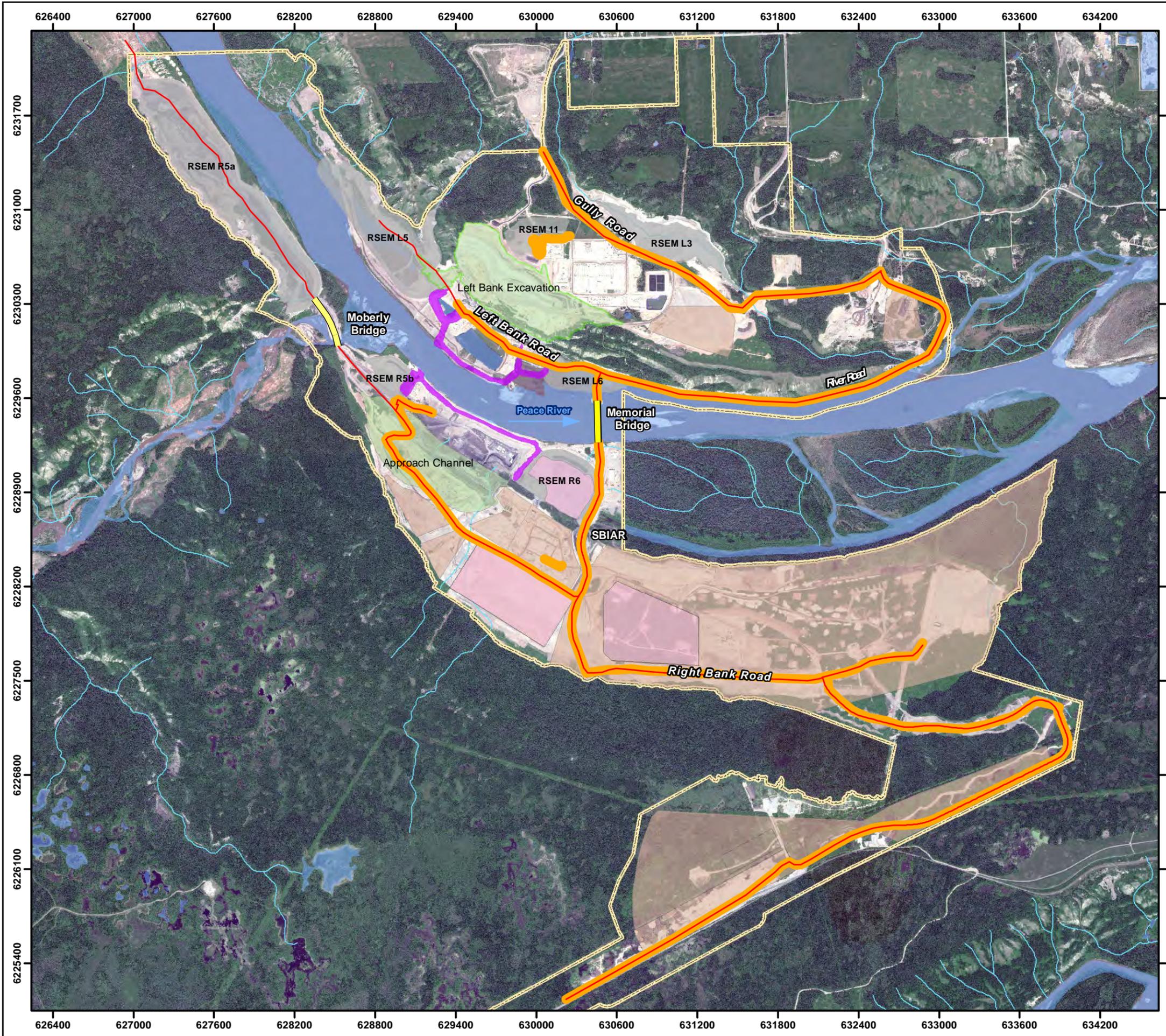


Figure 3: Polar frequency plot for PM<sub>2.5</sub> during the alert event period December 6, 2018 13:00 - December 7, 2018 06:00.

## APPENDIX F

A decorative background featuring a large, light beige curved shape on the right side, with a blue triangular shape in the top-left corner. A thin white line separates the blue and beige areas.

# EXAMPLES OF ROADWAY DUST SUPPRESSION WITH CALCIUM CHLORIDE APPLICATION AND HYDRO-SEEDING



# Site C Clean Energy Project

## Dust Management Calcium Chloride Application Areas (May 13, 2018)



### Legend

- Main Road**
- Main Road
- Bridge
- Calcium Chloride Application Areas
- Other Contractors Areas
- All Sites
- Site C Project Boundary
- Cofferdams
- Water Bodies

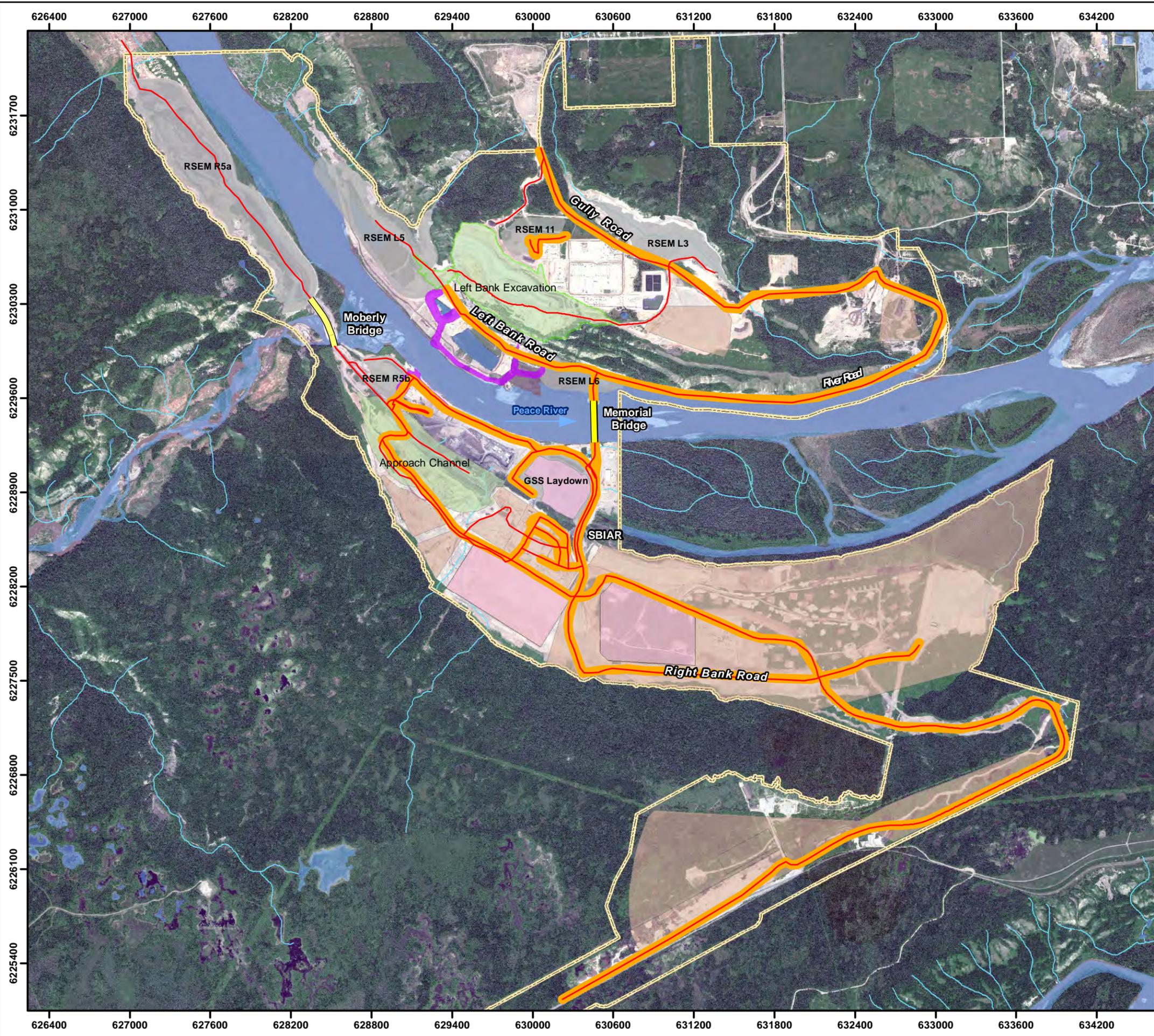
Data Source: Photosat Image 2016-04-14

### Figure 1

**PEACE RIVER HYDRO PARTNERS**

Created By: PRHP Environmental Dept.	Rev: 0
Datum: NAD 83 Zone 10N	
Date: May 18, 2018	

This map is for general illustration only and should not be considered a legal document. All geographic information has limitations due to the scale, resolution, date and source data. PRHP is not responsible for any interpretation or conclusions based on the data shown. This map is not to be used in whole or in part without permission of PRHP.



# Site C Clean Energy Project

## Dust Management Calcium Chloride Application Areas (July 29, 2018)



### Legend

- Main Road**
  - Work Road (Red line)
  - Main Road (Orange line)
- Bridge (Yellow line)
- Calcium Chloride Application Areas (Orange outline)
- Other Contractors Areas (Pink fill)
- All Sites (Brown fill)
- Site C Project Boundary (Yellow dashed line)
- Cofferdams (Purple fill)
- Water Bodies (Blue fill)

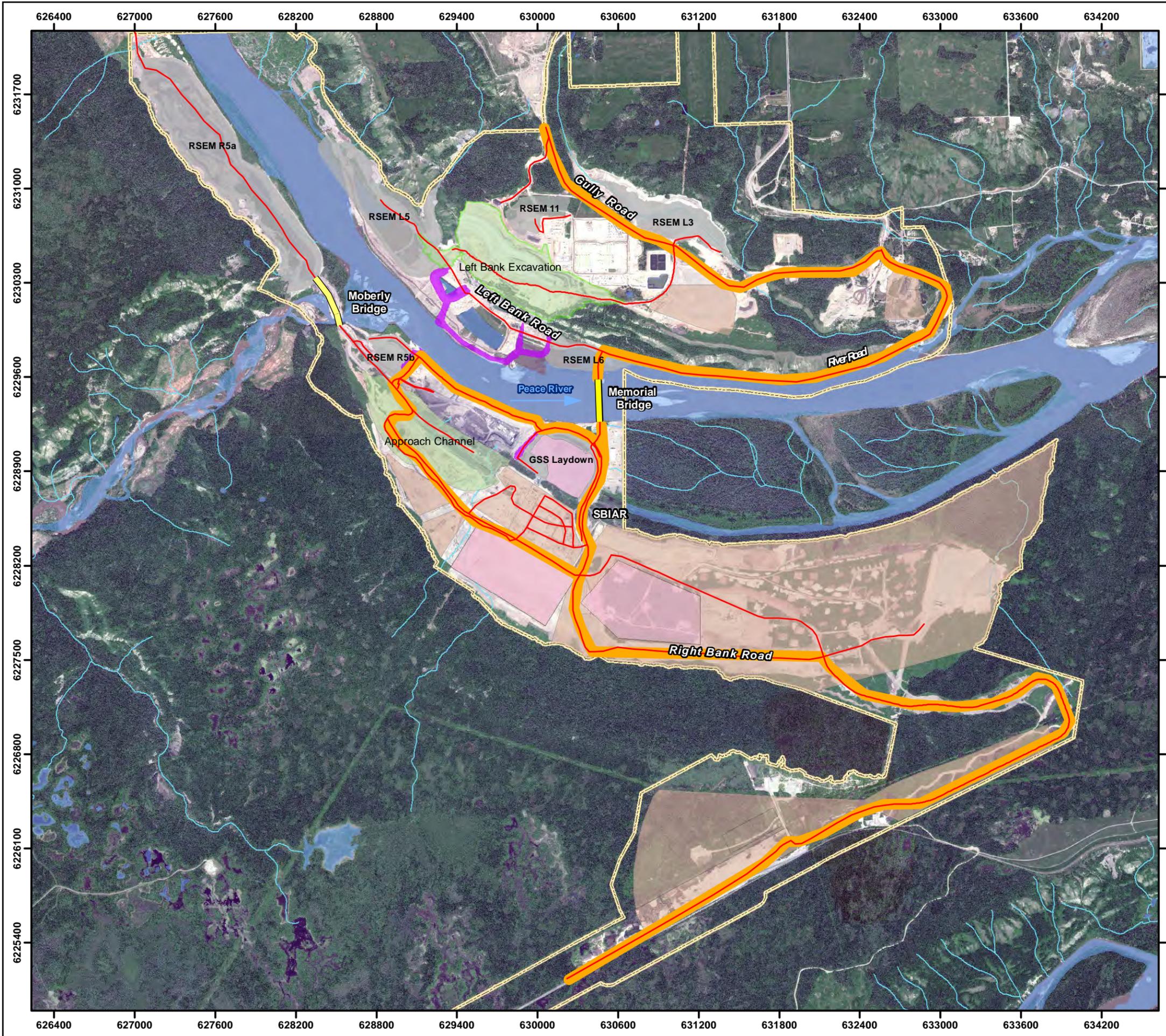
Data Source: Photosat Image: June 17, 2017

### Figure 1

**PEACE RIVER HYDRO PARTNERS**

Created By: PRHP Environmental Dept.	Rev: 0
Datum: NAD 83 Zone 10N	
Date: July 28, 2018	

This map is for general illustration only and should not be considered a legal document. All geographic information has limitations due to the scale, resolution, date and source data. PRHP is not responsible for any interpretation or conclusions based on the data shown. This map is not to be used in whole or in part without permission of PRHP.



# Site C Clean Energy Project

Dust Management  
 Calcium Chloride Application Areas  
 (October 18, 2018)



**Legend**

**Main Road**

- Work Road
- Main Road
- Bridge
- Calcium Chloride Application Areas
- Other Contractors Areas
- All Sites
- Site C Project Boundary
- Cofferdams
- Water Bodies

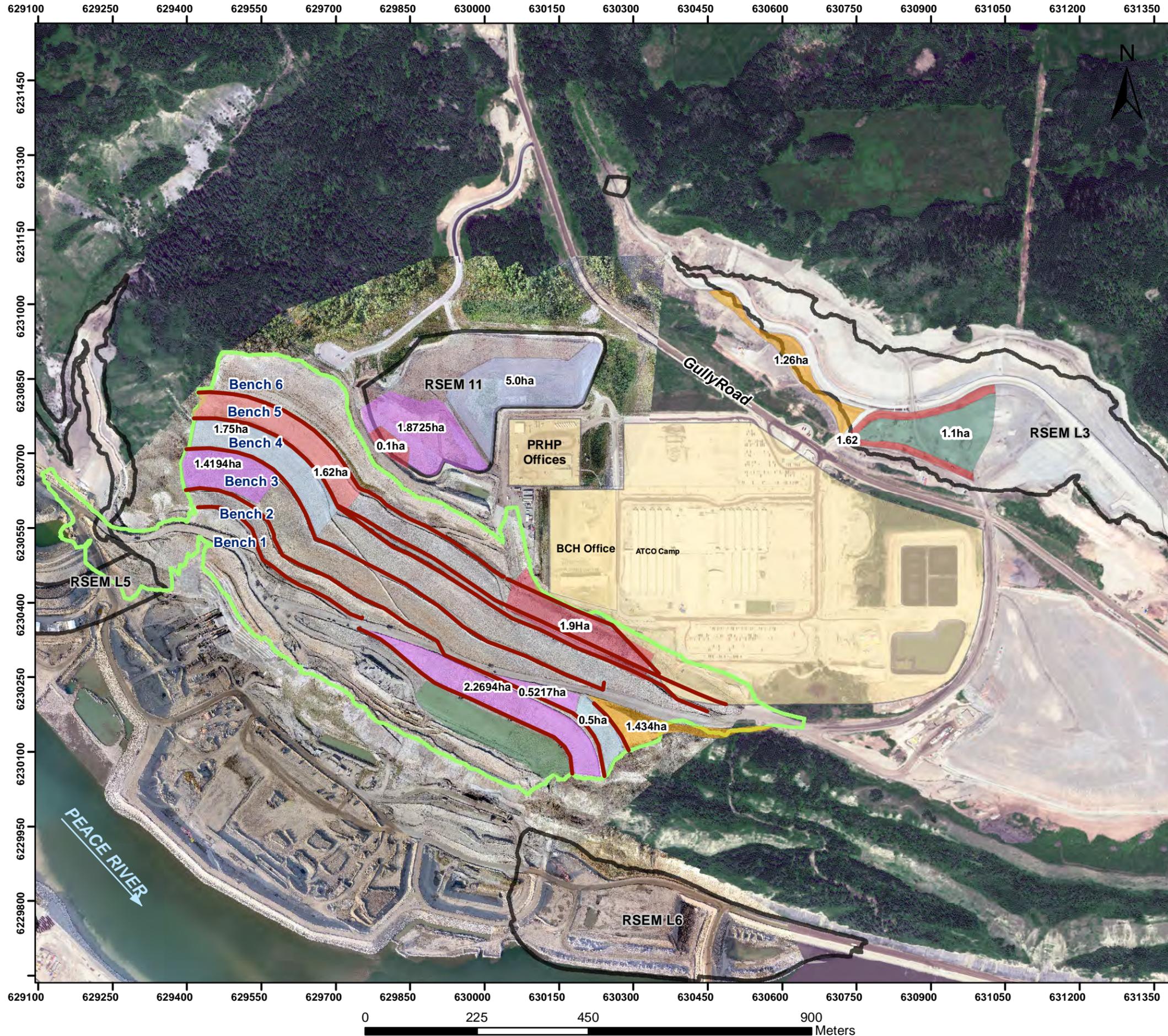
Data Source: Photosat Image: June 17, 2017

**Figure 1**

**PEACE RIVER HYDRO PARTNERS**

Created By: PRHP Environmental Dept.	Rev: 0
Datum: NAD 83 Zone 10N	
Date: November 10, 2018	

This map is for general illustration only and should not be considered a legal document. All geographic information has limitations due to the scale, resolution, date and source data. PRHP is not responsible for any interpretation or conclusions based on the data shown. This map is not to be used in whole or in part without permission of PRHP.



# Site C Clean Energy Project

Left Bank  
Permanent Hydroseeded Areas  
2018



## Legend

- Left Bank Excavation - Benches
- Left Bank Excavation
- Permanent Hydroseeding - Application Dates**
- Bench 5 - Grass Seed - June 1, 2018
- Bench 3 - Grass Seed / ESC Mix - July 27, 2018
- RSEM L3 - Grass Seed / ESC Mix - July 27, 2018
- Bench 3 - Grass Seed / ESC Mix - August 31, 2018
- Bench 4 - Grass Seed / ESC Mix - August 31, 2018
- Area 11 - Grass Seed / ESC Mix - August 31, 2018
- Bench 2 - Grass Seed / ESC Mix - October 2-3, 2018
- Bench 3 - Grass Seed / ESC Mix - October 2-3, 2018
- Area 11 - Grass Seed / ESC Mix - October 2-3, 2018
- Bench 5 - Grass Seed / ESC Mix - October 10, 2018
- RSEM 11 - Grass Seed / Mix - October 10, 2018
- L3 Additional Fill - Grass Seed / ESC Mix - October 10, 2018
- Bench 1 - Grass Seed / ESC Mix - October 23, 2018
- L3 Additional Fill - Grass Seed / ESC Mix - October 23, 2018

Data Source: UAV Imagery:  
Photosat Image: June 27, 2017

Figure 1



Created By: PRHP Environmental Dept.	Rev: 1
Datum: NAD 83 Zone 10N	
Date: November 16, 2018	

This map is for general illustration only and should not be considered a legal document. All geographic information has limitations due to the scale, resolution, date and source data. PRHP is not responsible for any interpretation or conclusions based on the data shown. This map is not to be used in whole or in part without permission of PRHP.